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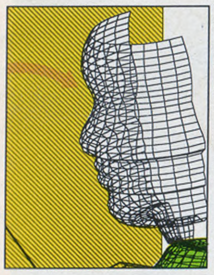

"Expert systems can be viewed as a printing press distributing low-cost interactive knowledge."

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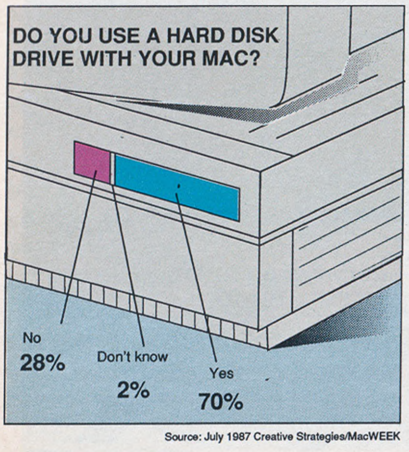


Source: July 1987 Creative Strategies/MacWEEK

Apple extends desktop publishing to new markets

BY RUSTY WESTON
MacWEEK Staff

SANTA CLARA, Calif. — With the PC pack nipping at its heels, Apple is seeking to widen its lead in desktop publishing with the endorsement of power-publishing software that elevates the Mac II to the workstation echelon.

Apple's announcement at last week's Seybold Desktop Publishing Conference featured John Sculley, chairman, president and CEO, marketing the Mac into the vanguard of the desktop-presentation market.

In both cases, Apple trumpeted products by third-party vendors that offer corporate buyers new solutions to previously very expensive problems. Apple, the clear leader in the large, low-end electronic publishing market, intends to carve out a high-end desktop market beyond

See APPLE, Page 24

Interleaf's publishing power comes to Mac II

BY ABIGAIL CHRISTOPHER
MacWEEK Staff

SANTA CLARA, Calif. — Software that once ran exclusively on UNIX-based workstations from Sun, Apollo and DEC is now being implemented on the Mac II.

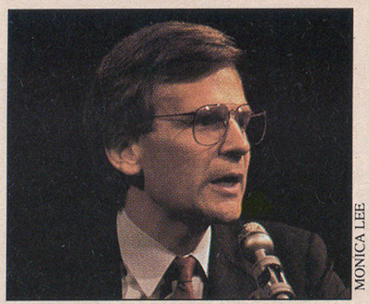
Interleaf Inc. of Cambridge, Mass., has ported a $2,495 version of its Technical Publishing Software (TPS) to the Mac II, making Apple's high-end platform an even stronger competitor in the workstation and corporate publishing markets.

Interleaf Publisher for the Mac II, announced here last week at The Seybold Conference on Desktop Publishing, provides real-time pagination of both text and graphics, Encapsulated PostScript support and sophisticated technical drawing tools such as Bezier splines and isometric graphics.

Interleaf Publisher is a technical documentation program that is compatible with all the Sun Microsystems Inc., Digital Equipment Corp. and Apollo Computer Inc. Technical Publishing Software (TPS) from Interleaf. However, Interleaf said it believes the Macintosh II version will transcend its

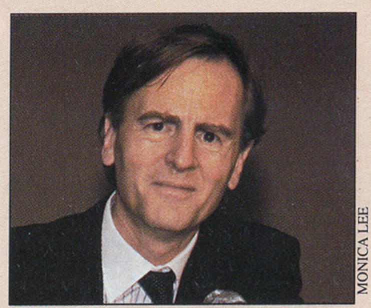
See INTERLEAF, Page 24

The word at Seybold ...



MONICA LEE

Paul Brainerd, Aldus president: "Desktop publishing is not a static field; it's competitive and the tools are getting better."

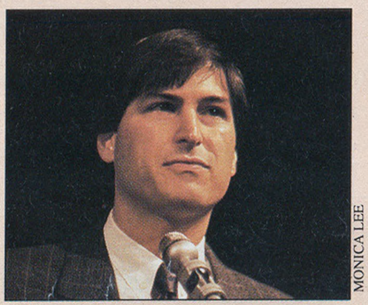


MONICA LEE

John Sculley, Apple president: "There's no evidence of MS-DOS machines being used effectively in desktop presentations."

MONICA LEE

David Boucher, Interleaf president: "Interleaf Publisher represents a breakthrough in the wall between personal computers and workstations."



MONICA LEE

Steven P. Jobs, NeXT president: "Personal computer architecture as we know it is starting to top out. Macintosh will peak next year and then go into a glide slope."

Adobe, NeXT launch Display PostScript

BY RUSTY WESTON
and DANIEL RUBY
MacWEEK Staff

SANTA CLARA, Calif. — Apple's former chairman, Steven P. Jobs, and its strategic partner in desktop publishing, Adobe, announced a version of PostScript for screen images that will offer Macintosh-like display routines to Apple competitors.

The interactive version of PostScript software technology, called Display PostScript, was codeveloped by NeXT Inc. of Palo Alto, Calif., and Adobe Systems Inc. of Mountain View, Calif. It will be available in the summer of 1988 for NeXT and other computers, both companies said here last week at the Seybold Desktop Publishing Conference.

Jobs, founder and president of NeXT, said an important limitation of today's computer systems is their "multiple imaging models." The Mac, for example, uses Adobe PostScript to describe images output to a LaserWriter, but it uses Apple's proprietary QuickDraw when creating images on the display.

"The differences between PostScript and

See JOBS, Page 24

dBASE Mac shipment heats up database field

BY ELINOR CRAIG
MacWEEK Staff

TORRANCE, Calif. — Ashton-Tate has shipped the long-anticipated dBASE Mac and the database market is heating up fast.

Industry analysts say Ashton-Tate may need more than marketing clout to win the database buyers who must choose among ACIUS Inc.'s 4th Dimension, Odesta Corp.'s Helix, Blyth Software Inc.'s Omnis 3 Plus and dBASE Mac.

"Our intent is to establish the same leadership position that we have with our PC product," said Lydia Dobyns, vice president of marketing for Ashton-Tate. The dBASE family has more than 60 percent of the retail market share, according to the company.

Most industry observers see dBASE Mac as being for non-developers and for those who want to build a database quickly before they want to start programming.

Ashton-Tate regards dBASE Mac as a relational database management system with application-generation tools. It sees 4th Dimension, by ACIUS of Cupertino, Calif., as an

See DBASE MAC, Page 24

STREETWISE, OFFICE SMART

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MacWEEK
INSIDE
Apple weighs RISC technology for next generation of computers
Macintosh SE

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Textronix printer supports Mac II's color

BY CLIFF LEHMAN
MacWEEK Staff

SANTA CLARA, Calif. — Tektronix Inc. of Wilsonville, Ore., got an early start in the desktop-presentation market last week, showing off what the company says is the first printer to support the Macintosh II's full color palette.

The 300 dot-per-inch 4693D Color Image Printer is priced at $7,995 and prints 16.7 million colors. A built-in image processor provides full-color printing capability, image scaling and image rotation. The printer itself is available now. The separate Macintosh II interface card and software will be shipping in November for an additional $495.

The printer does not use a page-description language; its color printing capability is based on Tektronix's dithering algorithm, for which a patent is pending.

The color printer uses a four-pass thermal-wax color-printing system that allows greater color saturation and produces true black, according to the company. Two monochrome modes allow users to print in 256 shades of gray or in black and white.

PICT files are printed in one of three print modes: small, medium and large.

The 4693D uses a printer engine from Sharp Electronics Corp. of Mahwah, N.J. Images can be downloaded to the 4693D in six seconds. The first copy rolls out in 90 seconds and subsequent copies take one minute each.

"Tektronix is a leader in high-end electronic visual technology, but the brick walls that used to define each industry have broken down," said Vincent Hope, president of Hope Reports Inc., a visual and audio market research firm in Rochester, N.Y.

In general, Hope said, the so-called desktop-presentation market will appeal to "casual or occasional presenters who started with computers and then got interested in presentation possibilites."

The machine is aimed at the desktop-presentation market and will be used mainly in presentations at the internal management level, according to Delayne Giardini, speaking for Tektronix.

The printer also will be used by designers, engineers, scientists and other professionals in mapping, medical imaging, image processing, technical data analysis and CAD/CAM, as well as graphic and computer arts, according to Rick Lada, product manager.

The 4693D's image processor is based on the Motorola 68020 coprocessor. A built-in frame buffer with 4 Mbytes to 12 Mbytes of RAM can store up to three images.

Image processing takes place in the specialized printer rather than in the host computer or workstation. The parallel interface can accept an image from the Mac II in 10 seconds, according to the company.

Tektronix IDG Marketing can be reached at P.O. Box 1000 MS 63-447, Wilsonville, Ore. 97070; (800) 225-5434 or in Oregon, (503) 235-7202. ■

Firms leap into desktop presentations

Flurry of new product announcements at Seybold

BY CLAIR WHITMER
MacWEEK Staff

SANTA CLARA, Calif. — Riding the coattails of Apple's strong positioning efforts in the desktop presentation market, nine companies made announcements about desktop-presentation products within the first two days of the Seybold Desktop Publishing Conference, held here last week.

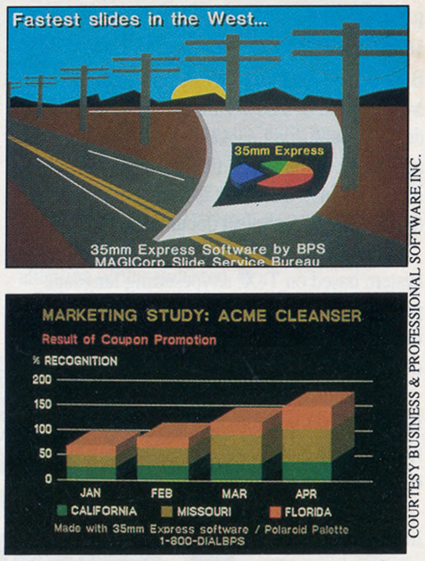
Three companies, including Cricket Software of Malvern, Pa., announced new products. Cricket officially introduced its new desktop presentation and graphics application, Cricket Presents... .

Cricket also announced an agreement with Autographix, a supplier of presentation-graphics systems and services based in Waltham, Mass. Cricket's Autographix Device Driver allows users to transmit images via modem to Autographix Imaging Centers in Boston, New York, Chicago, Los Angeles, Australia and Western Europe for reproduction on 35mm slides, overhead transparencies and color prints.

Business & Professional Software of Cambridge, Mass., was also openly trying to capitalize on Apple's endorsement of the market. The company announced plans to port its PC-based 35mm Express to the Macintosh, although no release date was specified.

The PC version of the software sells for $695 and includes eight chart formats, a clip

See SEYBOLD, Page 5



Business & Professional Software plans to port its PC-based 35mm Express desktop-presentation software to the Macintosh.

COURTESY BUSINESS & PROFESSIONAL SOFTWARE INC.

Mac products invade PC Expo

BY STEVE ROSENTHAL
Special to MacWEEK

NEW YORK — Corporate computer buyers at last week's PC Expo in New York City had more than a dozen Macintosh products to take a look at, even though MS-DOS machines and products continued to dominate the show.

A PC-based competitor to Apple's HyperCard drew strong interest. And vendors with products for both IBM and Mac markets typically reported about one in 10 attendees interested in the Mac, a proportion they characterized as significantly higher than last year.

For the Mac, connectivity with the IBM world was the major theme of the show. In addition to linkups to PCs through the TOPS network from Centram Systems West of Berkeley, Calif., Mac networkers had a choice of intersystem links through QuickShare from Compatible Systems Corp. of Boulder, Colo.; CommUnity for the Mac from Technology Concepts Inc. of Sudbury, Mass.; and 3+Mac from 3Com Corp. of Santa Clara, Calif.

According to Compatible Systems' President Matt McConnell, PC Expo was the first public showing of the QuickShare link, a network that combines SCSI-port, high-speed intersystem file access with a conversion routine that will translate formatted PC data into the Mac equivalent. The $465-per-connection hookup will be shipping "within a few weeks."

For links to mainframes and dial-up systems, Digital Communications Associates (DCA) of Alpharetta, Ga., had its IRMA Mac connections that put Macs on mainframe-style

See PC EXPO, Page 4

PageMaker business communications templates

BY ELINOR CRAIG
MacWEEK Staff

SANTA CLARA, Calif. — In his loudest whisper, Paul Brainerd, president of Aldus Corp., announced that the next step in Aldus' business market strategy will be the release of PageMaker Portfolio: Designs for Business Communications.

The package of 18 templates was announced last week at the Seybold Desktop Publishing Conference in Santa Clara, Calif., which landed on Day 82 of Aldus' 90-day quiet period. All companies that have made public offerings are prevented during this period from making major announcements that might affect their market price.

Designs for Business Communications is the second package in Aldus' PageMaker Portfolio series. The first was Designs for Newsletters. It includes templates designed to help PageMaker users with no design skills produce professional business documents.

"Templates help to bridge the gap between the design professional and the broader market of business customers with little or no design experience," said Mike Solomon, vice president of sales and marketing of Aldus.

The disks are accompanied by a 148-page instruction book explaining how people can

See ALDUS, Page 4

SPINOUT

Continued from Page 9

said microcomputer analyst Michele S. Preston of Salomon Brothers in New York. "It would be a mistake and would dramatically change the character of Apple."

"I think it might make sense to spin off peripherals," Evans said. "And industrial education makes sense."

Orsak likes Sculley's suggestion of starting an engineering company. "Right now, Apple is not geared to enter the engineering marketplace," he said. "But engineers want the Mac, so somehow the two will have to get together."

Apple could choose to follow in Digital Equipment Corp.'s tracks and produce proprietary microprocessors. Currently, Apple depends on Motorola for chips and OEMs for specialized peripherals.

"It would be much more difficult for a start-up company than for an Apple-backed company to succeed, because customers are so demanding," said Orsak.

Other analysts have bluntly suggested the threat of a spinoff could leverage third-party developers to fill gaps in Apple's product line.

"You want to appear to be removed (from competing with outside developers), but at the same time if there's an opportunity that exists that no one is taking advantage of, clearly you need to take advantage of it," Evans said.

Claris was created for that very reason. Sculley wrote: "If we were to sell a great deal of software under the Apple label, our third-party developers would have been at a disadvantage; and that would have discouraged them from creating new products for us. We didn't want to jeopardize their support, so we are simply going to spin the business out to run on its own and produce software under a new non-Apple trademark."

The strategy of establishing a federation of Apple satellites will help Apple keep talented employees interested, too, Sculley said.

Sculley, using a new-age metaphor, added that a senior manager will head each new company, called a "cell. Apple's genetic code will be in each new cell." ■

WINER

Continued from Page 9

have at Living Videotext."

Winer developed ThinkTank, an outliner and Living Videotext's first software product, in 1983. The firm also produces MORE, an idea processing/presenting software package.

William Coggshall, publisher of the "Desktop Presentations Report" in Mountain View, Calif., said Winer is likely developing "a more complete solution to complement" Living Videotext's desktop-presentations product line.

The missing link could be a slide recorder for delivering presentations, he said.

Winer, an engineer trained at the University of Wisconsin, is reportedly more comfortable doing creative rather than executive work. He developed an outline processor in college and refined it at VisiCorp, but it never made it to market. Winer launched Living Videotext in 1981, and with ThinkTank, he created a whole new category of software. ■

INVESTMENTS

Continued from Page 9

deliberately under-publicized Chromaline deal, the companies include: Sybase Inc. of Berkeley, Calif., maker of databases for micro-to-mainframe links; Forethought Inc. of Mountain View, Calif., developer of PowerPoint desktop-presentation software; and open systems interconnect (OSI) software vendor Touch Communications of Scotts Valley, Calif.

The venture group's charter is to purchase minority shares of companies that could play a strategic role in Apple's future. Analysts say Apple has set aside about $20 million for the investments.

Apple's venture group, formed in May 1986, is likely to move into the Venture Capital 100 compiled by Venture magazine each August.

The top 100 list is ranked by the amount of money invested each year. At the bottom of the list is a company that invested $10 million in 1986 — what Apple is forecast to invest this year. The top venture player, Citicorp Venture Capital Ltd., last year pumped $233 million into the economy.

Apple's recent investments in Sybase and Chromaline included some of the top venture players in the country: Hambrecht & Quist (No. 5), Venrock Associates (No. 76), TRW Inc., Oak Investment Partners (No. 26) and Arthur Rock, a member of Apple's board of directors and a noted venture capitalist.

"Apple's focused investments provide greater impact in their areas of interest than investments by more diversified funds," said Michael Orsak, an analyst for Robertson, Col-

These Fortune 500

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Nabisco Shell Oil **Boeing** United Technologies **Procter & Gamble** Oc
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...read Mac

man & Stephens in San Francisco.

"For the technologies Apple is familiar with, their investment is a significant endorsement. They presumably know more than the normal investor about their areas of expertise," he said.

"An association with Apple is very, very flattering for a young company," Chromaline's Henderson said. "It's definitely a signal that something wondrous is getting bet on by those guys."

"If Apple makes an investment in one of the markets they've identified as a key opportunity, then it signals that the company has a real solution," Orsak said.

In the case of Chromaline, it appears Apple is filling a gap in its desktop-presentation product line.

Apple users have a choice of two film recorders; IBM users have 20, according to William L. Coggshall, publisher of the "Desktop Presentations Report" newsletter in Mountain View, Calif.

"It's baffling to me that there aren't more vendors moving toward Macintosh," Coggshall said. "There appears to be a high demand.

"The perception by those companies (making film recorders) is that it's business people who need slides and most companies have IBM standards," Coggshall said. "Well, people using Macs need slides."

It remains to be seen whether Apple will stumble in the high-risk venture-capital arena.

"There's no doubt we will have a product in market next year," said Henderson.

Will it be an exclusively Apple market product? Henderson said: "No. It could work with an apricot or a peach cannery, for that matter." ■

CALENDAR

SEPTEMBER

21-22 — Datapro's Electronic Publishing: Strategies, Applications and Systems (New York)
Two-day course aimed at corporate users on how to apply electronic publishing while boosting productivity and cutting costs. Contact: Datapro at (800) DATA-PRO.

21-23 — CASES Computer-Aided Software Engineering Symposium (Boston)
Conducted by Digital Consulting Inc., conference includes a one-day review of the technology trends, characteristics, components and environment, and two days of presentations from developers of CASE products. Subjects include the human factor, design automation and artificial intelligence. Contact: Digital Consulting Inc. at (617) 470-3880.

23-25 — MacHack West Conference (Corvallis, Ore.)
Sponsored by the Oregon State University computer science department and Apple, the conference focuses on development systems and support, and new Apple products. Steve Wozniak will give the keynote address. Contact: MacHack West at (503) 754-2402.

29-Oct. 2 — INFO '87 (New York)
The Information Management Exposition and Conference, with the theme "Making Existing Information Systems More Productive," features three "focus" days: financial service companies, manufacturing companies, and government agencies and departments. Conference includes workshops, full-day courses and 48 sessions. Contact: INFO '87 at (203) 964-8287.

30-Oct. 2 — Apple Expo (Paris)
This trade show will feature Apple Computer France and associated third-party developers. Roughly 70 exhibitors and 30,000 participants will attend. Contact: Jean-Claude Muratore at Apple Computer France at (1) 69.28.01.39.

OCTOBER

2-4 — Apple Business Users Conference (Chicago)
Focusing on getting the most value from Apple computer systems in business environments, the conference will include 45 seminars. Subjects covered include software selection, software usage, IRS issues and system setup and conversion. Technical sessions also will be offered. Contact: Phase III at (312) 653-7640.

4-6 — 1987 Small Business DataTrack Service Conference (New York)
Sponsored by CAP International, the conference is designed to help vendors reach sales goals by capitalizing on the small-business market. Topics include distribution strategies, service and training, advertising and product design. Contact: Jean O'Toole at CAP International at (617) 834-6832.

Send calendar events to: Clair Whitmer, MacWEEK Calendar, 525 Brannan St., San Francisco, Calif. 94107.

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THE LONG VIEW

Lawrence Magid

A few weeks ago, I got a color monitor for the Mac II. It reminds me of my early experience with color TV. When I was a kid, a neighbor bought one of the first sets. On those rare occasions when a station broadcast in color, we would sit around gawking at the tube, not really caring what we were watching. The rest of the time that expensive set was tuned to black-and-white programs.

That's how it is with the Mac II. With the exception of the new versions of MORE and MacProject and a few graphics programs, my entire software collection is black and white.

That's not the case with IBM PC software. Most MS-DOS programs run in color. To be fair, the PC was designed with color in mind, while the first color-compatible Macintoshes are just becoming available.

Someday the Mac will have plenty of color software, but currently the economic incentive for software companies to colorize isn't nearly as strong as it is with the IBM PC.

The Mac II isn't a mass-market business machine. At list price, a color Mac II with an Apple hard disk costs at least $7,000, about twice the price of an SE. Admittedly, the Mac II has a lot to offer, but you have to buy the whole package just to get the color.

IBM and most of the clone makers provide a color option on all desktop machines. Even the new IBM PS/2 Model 25 with its built-in monitor comes in either monochrome or color. The color model at $1,695 is only $345 more than the monochrome.

When I raised the issue with John Sculley, Apple chairman, president and CEO, he said a low-cost color machine isn't a high priority because of the lack of an affordable color output device. I disagree with both his rationale and his assessment of the color output market.

First, printed output isn't the only end product of computing. Many people use their machines as personal information tools. The data on the screen is important regardless of how or whether it is printed. IBM recognized that years ago when it developed color terminals to highlight information that might otherwise be obscured. Apple knows it, too. Color is an option on the Apple II family.

I also disagree with the assertion that color output devices are out of reach. Apple has identified "desktop presentations," an offshoot of desktop publishing, as a major strategic direction. Although the LaserWriter can produce very impressive black-and-white transparencies, a growing number of speakers and seminar leaders are insisting on color slides to enhance their presentations.

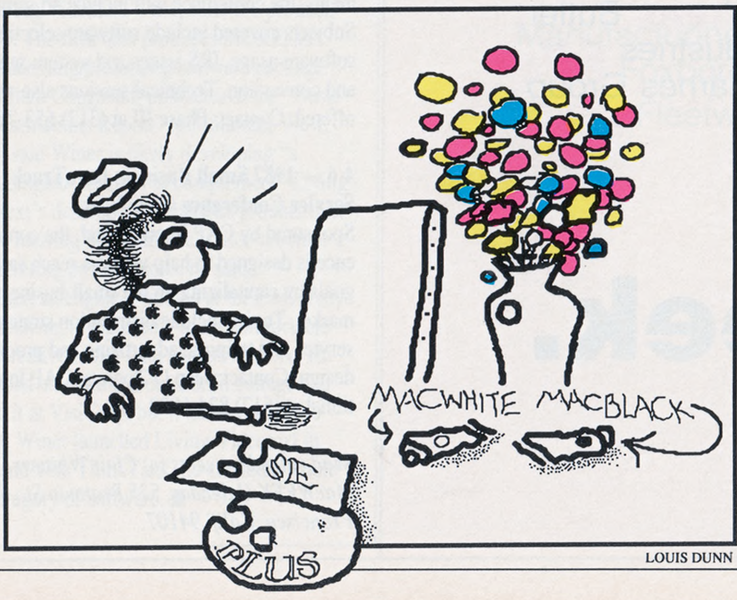
You can now use a monochrome Mac to produce color slides. I'm impressed with the ImageMaker Desktop Slide Maker from Presentation Technologies of Sunnyvale, Calif. The $4,995 device works with any Mac to expose color slide film for processing by a photo lab. It works with MacDraw, PowerPoint, MORE and other programs by allowing the user to assign output colors to various monochrome fill patterns.

And color printing is not out of the question. An excellent color printer is now available from the San Diego division of Hewlett-Packard. The $1,395 PaintJet printer offers near letter-quality text along with very impressive color graphics. The resolution, at 180 dpi, is still below professional publishing standards, but the graphics are quite good.

In the meantime, several companies, including QMS, Mitsubishi and Panasonic, are working on color thermal-transfer printers that produce stunning color hard copy. The machines are expected to sell in the $10,000 to $20,000 range.

Having to use a monochrome monitor to produce color output violates the credo of "what you see is what you get." Besides, color is more fun. I've heard there will soon be a product from a third party to retrofit an SE with a color monitor. That's a good idea, but it's not enough. To achieve critical mass, it needs to be an Apple product.

What this world needs is a color version of the SE or a lower-priced "open Mac" with a choice of monitors. And while you're at it, please provide an upgrade path for the SE and the Plus. ■



LOUIS DUNN

TO THE EDITOR

Bring back "street prices"

I was disappointed in your response to James C. Allen's letter in the Aug. 11 issue. Allen, a computer sales representative, complained about your policy of publishing "street prices" of products reviewed in MacWEEK because, he said, "Sometimes I beat those prices; sometimes I sell at full retail. It all depends upon the client and how much support he expects." Apparently, he was worried that if his clients knew the street price he would never be able to charge the retail price.

This seems like a thinly veiled deception to me. If Allen was truly interested in adjusting the price to meet the customers' needs, why not be up front about it and let the customer choose? For example, his company could use a two-tiered price policy based on whether the customer desires support or not. Instead, Allen makes the judgment himself and thereby prevents the customer from having any say in the decision. Actually, I question whether a customer who claimed to need no support would necessarily be offered a discounted price by Allen.

What Allen really seems to be objecting to is that his clients' awareness of street prices inhibits his ability to charge them as much as possible.

Dr. Theodore Landau, associate professor of psychology
Oakland University, Rochester, Mich.

PICT neglect

The article "New file standards for graphics evolve" (Aug. 18) was interesting as far as it went, but it neglected one important new format: Apple's revised PICT format, which has a number of advantages that have led many developers to conclude it will be the standard format in the future.

The TIFF format was created to support scanned images under both MS-DOS and the Macintosh and does not support object graphics. Also, as noted in the article, there are a number of variants of the format, thus diluting the impact of such a "standard."

EPSF is the format most often used for programs that deal exclusively with PostScript, but PostScript data also can be embedded within both the old and new PICT formats. Apple has indicated it would like to see the new PICT format (sometimes called "PICT 2") become the standard graphics format and recently mailed documentation for it to all certified developers.

PICT 2 supports bitmaps of arbitrary resolution and gray-scale levels, thus obviating any need for TIFF in the Macintosh world. It is also the only standard format for color images to date, supported by such programs as Super 3D from Silicon Beach Software and PixelPaint from SuperMac Software. Our own Colorizer package includes an application to add colors to an old-style PICT to create a new PICT 2 document.

PostScript still holds a clear advantage in rotating and transforming images, including text. However, if Apple releases its own non-PostScript printer, it's likely to include enhancements to QuickDraw (and thus PICT 2) to support rotation. Apple is clearly committed to top-to-bottom QuickDraw (PICT) support.

Joel West, president
Palomar Software Inc., Vista, Calif.

Well known

I deeply resent the comments in Mac the Knife's column in the Aug. 25 edition of your publication. You make it sound like the only legitimate "Seybold" is my brother Jonathan. If you researched your facts, you would discover that my sister, Patty, and I are both well known in the industry. Jonathan happens to be involved in publishing and desktop publishing activities and also happens to advertise in your publication. I would suggest that it might be in order for your publication to find a way to discuss the "Seybold family" in fairer terms and one which describes each of them (my father and the three of us).

Andrew Seybold, editor in chief
Andrew Seybold's Outlook, Santa Clara, Calif.

"Upgrade" a misnomer

I am very surprised to learn Adobe is charging a $40 "upgrade fee" for removing copy protection. Adobe's decision to charge this fee is very disturbing for the following reasons:

1. Tying the fonts to a single printer was Adobe's idea. To the best of my knowledge, it is the only company with such an attitude and policy. The copy protection was selected even though it was known it would make loading and using the fonts difficult.
2. Removing the copy protection is certainly welcome, but it is definitely not an upgrade when such technology was already available.
3. A $40 upgrade fee is too high when original disks are returned.

The fair upgrade would have been mailing the new non-copy-protected fonts to registered users — without asking for any postage and handling charges. Adobe should be thankful to the customers who helped the company become what it is today by supporting Adobe fonts in spite of their ridiculous copy protection.

Dilip Gohil
Dilip Gohil Designs, Pleasant Hill, Calif.

Send letters to MacWEEK, 525 Brannan St., San Francisco, Calif., 94107; or via MCI Mail to MacWEEK. Please include your name, title, company name, address and telephone number.

COMMUNICATING

John Edwards

"I've got good news, John." Neil, my old college buddy, was excited.

My pal is nervous by nature. Back in school, he was the type of guy who was afraid of everything: girls, professors, blue-book exams, ivy. Since college, Neil has spent his days inching along the narrow, gray halls of a major insurance company. He's now manager of the firm's benefits denial section.

Last week, I had lunch with Neil in a Chicago restaurant. Neil's a great guy and, despite his phobias, isn't afraid to pick up a check.

This day, nervous Neil was as effervescent as the bottle of Moet he had ordered for us.

"It's terrific, John. This morning, I finally got the go-ahead from the big boss to integrate our Macs and PCs into one network."

"Great!" I replied. "Tell me the details."

Neil paused for a second, then spilled his guts (plus some champagne from his glass).

"You know what a Mac fanatic I am. I've been pushing the boss for more than a year to do this. Well, he's finally given the green light. We're putting 120 Mac SEs on a new LAN with 300 PCs."

Neil, by this time, was glowing. The Moet was taking effect.

"Ah, that's wonderful, Neil. Congratulations," I said. "So how are you going to get those Macs and PCs on a network?"

Neil froze. A look of disbelief mixed with horror dropped over his face. Apparently, he had never pondered this point.

After a few tense, uncomfortable moments, his lips began to move. Ever so softly, I heard a voice drift toward me from the other side of the table. "Gee, I never thought about that," he said, almost in a whisper. "What should I do?"

I was tempted to suggest he look in the Yellow Pages under "consultants," but since Neil was treating me to French champagne and Italian linguini, I decided to be charitable.

"There are three basic ways to connect Macs to PCs," I said. "For instance, you can link a PC to a Mac through the computers' serial ports. You then run software on each machine to translate and transfer documents."

"Is that any good?" asked Neil.

"Not in your situation," I answered. "That approach only works in localized, low-use environments. The arrangement is not even a network in the true sense of the term.

"A better method is to put the PCs with Macs on an AppleTalk network. Using a package like Centram Systems West's TOPS, PC and Mac users can share peripherals and swap data. It's a nice system."

"But there's a problem, right?" Neil was suspicious.

"Well, yes." I replied. "What you're really doing under that arrangement is bringing PCs into the Mac environment. That's OK, but your current PC users are likely to complain about the sudden loss of speed and flexibility. Although AppleTalk is a great step forward, the fact remains that most PC networks are faster and offer more sophisticated options."

"So the alternative is to adapt the Mac to a PC network," responded Neil. "But won't that remove all of the Mac's features and just turn it into another PC clone?"

"Not necessarily," I replied. "As the market develops, I think we'll see network vendors striving to support the Mac user interface, particularly since the PC itself is becoming more Mac-like every day. Anyway, once the user logs off the network, he still has a regular stand-alone Mac to play with."

"OK, that's the future. What do I get now?" Neil asked. My nervous friend was getting impatient.

"At the moment, your options are limited. 3Com's 3+ system is the only available network that's compatible with both Ethernet and the IBM Token-Ring Network. But other manufacturers, including Novell, will have similar systems on the market by the year's end."

Then I noted, "When current IBM LANs can accommodate Macs, that's when you're going to see managers adopting a dual Apple/IBM standard — if the LANs can live up to their promise of full integration, that is."

"Well, I can wait," said Neil. "The boss gave me a year to get everything implemented. I'll just wait and see what develops."

And then Neil picked up the tab, bless my nervous buddy's heart. ■

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Unprotected software is not freeware

Recently, many leading software firms have removed copy protection from their software. They have taken this action for one reason—you, the user, have requested it. You say that unprotected software is less trouble to use, and that it generally simplifies the use of your PC. Many software firms responded and have given you what you requested.

Now the software industry requests something of you. ***Please do not illegally duplicate unprotected software.*** Unprotected software enjoys the same legal protection as protected software. It is not a violation of federal copyright laws to make a back-up copy, but making or distributing additional copies for any other reason is against the law.

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Hardware and software for the business Mac.

SOFTWARE

NCP denotes not copy-protected.
CP denotes copy-protected.

Aegis Development ... NCP	
Doug Clapp's Word Tools	$42.
Affinity Microsystems ... NCP	
Tempo *(power user's macro utility)*	55.
Allan Bonadio Associates ... NCP	
Expressionist *(equation processor)*	52.
ALSoft ... NCP	
DiskExpress *(maximize disk performance)*	27.
Altsys ... NCP	
FONTastic Plus *(advanced font editor)*	49.
Fontographer *(Laserwriter font editor)*	245.
Ann Arbor ... NCP	
FullPaint *(advanced Paint program)*	49.
Batteries Included ... NCP	
Thunder! 1.23 *(spelling checker)*	32.
Berkeley System Design ... NCP	
Stepping Out *(requires 512k)*	55.
Blyth ... CP	
Omnis 3 Plus *(multi-user available)*	call
Borland International ... NCP	
Turbo Pascal Tutor	49.
Sidekick 2.0	59.
Reflex *(information management analysis)*	59.
Turbo Pascal *(HFS compatible)*	59.
BrainPower ... NCP	
Graphidex *(DA graphics organizer)*	69.
Designscope *(electronic circuit design)*	129.
StatView 512+ *(req. external drive, 512k)*	179.
Bravo Technologies ... NCP	
MacCalc *(easy to use spreadsheet)*	79.
CasadyWare ... NCP	
Fluent Fonts *(two-disk set)*	29.
Fluent Laser Fonts *(Vols. 1-15)*	*each* 48.
CE Software ... NCP	
Disktop 3.0 *(powerful DA Finder)*	35.
Central Point Software ... NCP	
Copy II Mac *(includes MacTools)*	20.
Centram Systems West ... CP	
TOPS *(file-server/LAN software)*	125.
Challenger Software ... NCP	
Mac3D *(3D graphics, CAD features)*	129.
Chang Labs ... NCP	
Rags to Riches Ledger or Payables	125.
Rags to Riches Receivables *(req. 512k)*	125.
The C.A.T. *(Contacts, Activities, Time)*	199.
Inventory Control or Professional Billing	243.
Cortland ... NCP	
TopDesk 2.1 *(7 new desk accessories)*	34.
Cricket Software ... NCP	
Statworks *(statistical package)*	75.
Cricket Graph *(multiple windows)*	125.
Cricket Draw *(advanced draw capabilities)*	175.
Data Tailor ... NCP	
Trapeze *(spreadsheet, reqs. 512k)*	159.
DataViz ... NCP	
MacLink Plus *(transfer Mac/IBM data)*	159.
Digital, etc. ... NCP	
Turbo Maccountant *(GL,AP,AR,Payroll)*	259.
Dove Computer ... NCP	
RAM Snap *(RAM Disk/Disk Cache)*	35.
Dubl-Click Software ... NCP	
World-Class Fonts! *(both Volumes)*	49.
WetPaint Clip Art *(both Volumes)*	49.
Enabling Technologies ... NCP	
Pro 3D *(3D shaded modeling)*	199.
Forethought ... NCP	
FileMaker Plus *(feature-packed database)*	149.
PowerPoint *(professional presentations)*	209.
FWB Software ... NCP	
Hard Disk Backup or Partition	38.
Hard Disk Util *(program backup)*	56.
Greene, Inc. ... NCP	
QuickDEX *(address book)*	24.
Ideaform ... NCP	
MacLabeler or DiskQuick	29.
Imagine ... NCP	
Smart Alarms *(DA reminder system)*	38.
Infosphere ... CP	
LaserServe *(LaserWriter spooler)*	$65.
MacServe *(AppleTalk software)*	165.
Innovative Data Design ... NCP	
MacDraft 1.2A *(requires 512k)*	159.
LaserWare ... CP	
LaserWorks *(requires 512k, Laserwriter)*	199.
LaserPaint *(requires Mac Plus, Laserwriter)*	319.
Layered ... CP	
Notes for...Excel, Works, or Word	*each* 42.
Legisoft/Nolo Press ... NCP	
WillWriter 2.0 *(prepare your own will)*	31.
Letraset ... NCP	
Ready,Set,Go!3	249.
Living Videotext ... NCP	
More *(outlines, windows, & tree charts)*	149.
Lundeen & Associates ... NCP	
WorksPlus Spell	39.
Macropac International ... NCP	
101 Macros for Excel	49.
Micro Analyst ... NCP	
Mac Zap *(recover crashed hard disks)*	36.
Microsoft	
Basic Interpreter 3.0 *(NCP)*	64.
Chart 1.02 *(42 chart styles, CP)*	72.
Multiplan 1.1 *(63 col. by 255 rows, CP)*	111.
File 1.05 *(flexible data manager, NCP)*	111.
Basic Compiler 1.0 *(NCP)*	119.
Fortran 2.2 *(compiler, NCP)*	169.
Works 1.0 *(integrated tool, NCP)*	189.
Excel 1.04 *(power spreadsheet, NCP)*	224.
Word 3.01 *(word processor, NCP)*	239.
Mindscape ... CP	
GraphicWorks 1.1 *(newsletters, posters)*	48.
Monogram ... NCP	
Dollars & Sense *(home, small business)*	81.
Odesta ... NCP	
Double Helix *(relational, custom menus)*	275.
OWL International ... NCP	
Guide *(hypertext, free-form info)*	79.
Guide Envelope System	99.
Palantir ... NCP	
inTalk *(communication to emulation)*	99.
PBI Software ... NCP	
HFS Locater *(DA organizer for HFS)*	26.
HD Backup *(supports MFS, HFS)*	29.
Personal Computer Peripherals ... NCP	
HFS Backup	32.
ProVUE Development ... NCP	
OverVUE 2.0 *(power-packed database)*	149.
Satori ... NCP	
BulkMailer 3.0 *(mailing lists)*	85.
BulkMailer Plus *(up to 90,000 names)*	199.
Legal Billing *(attorneys to accountants)*	385.
Legal Billing II *(full trust accounting)*	575.
Project Billing *(architects to engineers)*	445.
Silicon Beach Software ... NCP	
Silicon Press *(printer utility, 512k)*	41.
SuperPaint *(advanced graphics program)*	54.
SoftStyle ... NCP	
Printworks *(print faster & in color)*	49.
Software Discoveries ... NCP	
Record Holder Plus *(data manager)*	45.
Software Ventures ... NCP	
Microphone 1.1 *(includes Glue™)*	119.
Solutions, Inc. ... NCP	
SmartScrap & The Clipper or Glue	41.
SuperGlue *(total graphic integration)*	59.
SuperMac Software ... NCP	
SuperSpool 3.4	49.
Diskfit *(backup & restore utility)*	49.
SuperLaserSpool	99.
Multi-User SuperLaserSpool	259.
Survivor Software ... NCP	
MacMoney *(financial planner)*	42.
Symmetry ... NCP	
Acta 1.2 *(outline/writing desk accessory)*	38.
PictureBase 1.2 *(clip art manager, 512k)*	59.
T/Maker ... NCP	
ClickArt Personal Graphics, Effects, Publications, Letters Vol. 1 or 2, Holidays, Business Image	*each* 28.
Bombay, Plymouth, or Seville Laser font	$46.
Write Now *(word processor)*	99.
Think Technologies ... NCP	
Laserspeed *(Laserwriter utility)*	59.
Lightspeed Pascal *(includes debugger)*	85.
Lightspeed C *(top-rated C Compiler)*	99.
InBox Starter Kit *(CP)*	225.
InBox Personal Connection *(Mac & PC)*	call
TML Systems ... NCP	
TML Source Code Library	58.
TML Pascal *(compiler, req. 512k)*	68.
TrueBasic ... NCP	
True BASIC *(ask about special)*	59.
Algebra 1 or II, Pre-calculus, Trigonometry, 3D Graphics, Discrete Math, Probability, Chippendale, Arithmetic, Calculus & MacFunction	*each* 35.
TrueSTAT *(statistics)*	58.
Runtime *(create stand-alone applications)*	59.
William & Macias ... NCP	
myDiskLabeler *(design & print labels)*	24.
myDiskLabeler w/Color *(req. Imagewriter II)*	33.
myDiskLabeler w/Laserwriter option	38.
Working Software ... NCP	
Findswell *(locate documents fast)*	32.
Spellswell 2.0 *(spelling checker)*	42.

HARDWARE

Manufacturer's minimum limited warranty period is listed after each company name. Some products in their line may have longer warranty periods. Note: Some hardware items are available in either platinum or beige color. Please specify.

20 Megabyte SCSI Hard Drive	569.
AST Research ... 2 years	
AST Turboscan *(300 dpi scanner)*	1479.
AST 2000 *(20 MB, 20 MB tape)*	1395.
AST 4000 *(74 MB, 60 MB tape)*	3695.
Curtis Manufacturing ... lifetime	
Diamond *(6 outlets)*	29.
Emerald *(6 outlets; 6 ft cord)*	36.
Sapphire *(3 outlets; EMI/RFI filtered)*	47.
Ruby *(6 outlets; EMI/RFI filtered; 6 ft cord)*	55.
Dove Computer ... 90 days	
MacSnap 548S *(512E to 2 Mb w/SCSI Port)*	469.
MacSnap 2S *(1 Mb to 2.5 Mb, expandable)*	659.
MacSnap 4S *(1 Mb to 4 Mb)*	1399.
Ergotron ... 1 year	
Mouse Cleaner 360°	15.
MacTilt or MacTilt SE	74.
MacBuffer 512k	329.
MacBuffer 1024k	429.
Farallon Computing ... 1 year	
PhoneNET PLUS *(DB-9 or DIN-8)*	39.
Hayes ... 2 years	
Smartcom II *(communications software)*	88.
Smartmodem 1200	299.
Smartmodem 2400	449.
IOMEGA ... 90 days	
Bernoulli Box *(dual 20 MB w/SCSI)*	1849.
Kensington ... 1 year	
Disk Drive Cleaning Kit	20.
Tilt/Swivel	22.
Universal Copy Stand	24.
Polarizing Filter or Surge Suppressor	34.
Printer Muffler *(80 column)*	39.
System Saver Mac or Control Center	64.
A-B Box *(for the Mac Plus)*	64.
Turbo Mouse	85.
Koala Technologies ... 90 days	
MacVision *(digitizer)*	175.
Kraft ... 1 year	
3 Button Quickstick	39.
Migent ... 1 year	
Pocket Modem *(ext. 1200 baud)*	169.
Mirror Technologies ... 1 year	
Magnum 800 External Drive	209.
Magnum 20 Tape Backup	899.
MagNet 30x *(w/cable)*	949.
MagNet 40x *(w/cable)*	1299.
MagNet 40/40 *(40MB, 40MB tape)*	$2395.
Nutmeg Systems ... 1 year	
Nutmeg FPD 15″ Monitor	1495.
Nutmeg 19″ Monitor	1579.
Personal Computer Peripherals ... 1 year	
MacBottom HD 21MB *(SCSI)*	859.
MacBottom HD 21MB *(SCSI)* with modem	999.
MacBottom HD 45MB *(SCSI)*	1285.
SoftStyle ... 90 days	
MacEnhancer *(for plotters to printers)*	179.
Summagraphics ... 90 days	
MacTablet 12″ x 12″ *(sketching)*	379.
Systems Control ... 2 years	
MacGard *(surge protection)*	55.
Thunderware ... 90 days	
ThunderScan 4.0 w/Power Port	199.

DISKS

Sony 3½″ DS/DD Disks *(box of 10)*	19.
Fuji 3½″ DS/DD Disks *(box of 10)*	20.
MAXELL 3½″ DS/DD Disks *(box of 10)*	20.
Verbatim 3½″ DS/DD Disks *(box of 10)*	20.
3M 3½″ DS/DD Disks *(box of 10)*	21.

ACCESSORIES

I/O Design	
Imageware II *(Imagewriter II carry case)*	49.
Macinware Plus *(Mac Plus carry case)*	69.
Macinware SE *(Mac SE carry case)*	79.
Kalmar Designs	
Teakwood Roll-top Case *(holds 45 disks)*	14.
Teakwood Roll-top Case *(holds 90 disks)*	21.
Teakwood Roll-top Case *(holds 135 disks)*	29.
Moustrak	
Moustrak Pad *(standard 7″ x 9″)*	8.
Moustrak Pad *(large 9″ x 11″)*	9.
Sensible Softworks	
Quality "MacAttire" nylon dust covers	7-17.
High Trek Mac Plus or SE carry case	59.
High Ttrek Mac SE carry case	69.

OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
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- All U.S. shipments insured; no additional charge.
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- Allow 1 week for personal and company checks to clear.
- UPS Next-Day-Air available.
- COD max. $1000. Cash or certified check.
- 120 day limited warranty on all products.*
- To order, call us anytime Monday thru Friday 9:00 to 9:00, or Saturday 9:00 to 5:30. You can call our business offices at 603/446-7711 Monday through Friday 9:00 to 5:30.

SHIPPING

Note: Accounts on net terms pay actual shipping. **Continental US:** Barring massive computer failures and other natural or unnatural catastrophes, all orders phoned into MacConnection by 8 PM EST will ship Airborne the same night for next day delivery, except for those within UPS Ground Zone 1 (which is also an overnight service). The total freight charge on any order placed with MacConnection is now $3. Backorders will also ship Airborne overnight at no additional charge. Airborne assesses an additional $7 charge for C.O.D. **Hawaii:** Shipments may incur an additional day. **Alaska and Outside Continental US:** Call 603/446-7711 for information.

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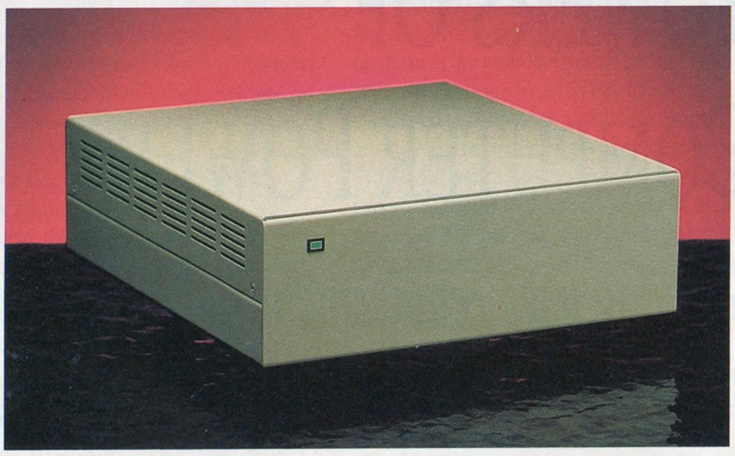
Boffo!

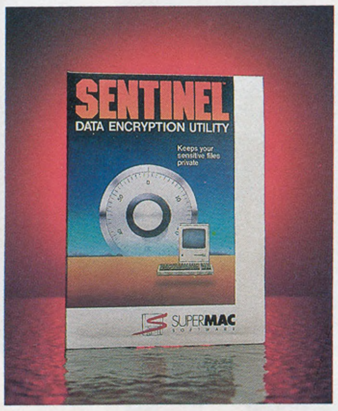
Hard drive down memory lane.



Looking for an easy way out of disk swapping and into hard drive heaven? Try our MacConnection 20 megabyte hard drive, made expressly for us by a leading manufacturer. It's one of the most reliable we've tested. Just put it under your Mac (it's only 3½″ high) and plug it into your SCSI port with the conveniently enclosed cable. The price is remarkably reasonable, so if you have one of the original Macs without a SCSI port, you might even consider buying one to plug it into. One of the things we like best about this drive is the *additional* SCSI port on the back of each one—you can chain them together for mega mega memory as your business grows. And, it's convection-cooled, so your concentration won't be blown away by a noisy fan. The package also includes a backup software utility that simplifies backing up your hard drive onto disks.

20 Megabyte SCSI Hard Drive ... 120 days....... $569

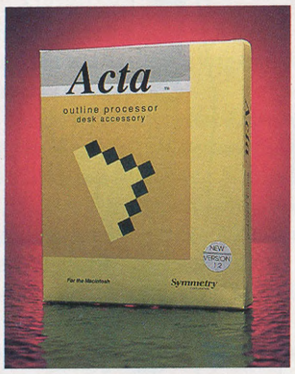
Need some protection?



We all know that shredding documents is an important part of becoming a national hero. But what about all those incriminating files you have on disk? That's a job for *Sentinel* from SuperMac Software. It's much faster than competitive programs, and gives you two encryption methods (*Data Encryption Standard* and *SuperCrypt*) It also keeps track of unlocked documents so you can secure them fast (whenever there's a suspicious knock on the door). So stop leaving those secret bundles of bits out in the electronic open. Lock them up tight with *Sentinel*!

SuperMac Software's Sentinel 1.0 (not copy-protected, for 512, 512E, MacPlus & SE)........................... **$99**

Organize your thoughts.



Everyone needs a place to store idle thoughts. Shoeboxes, paper cups, bulletin boards, and old tofu buckets (old tofu buckets?) are all right. But if you're serious about getting that report, presentation, or even shopping list in order, try *Acta*. Whenever a flash of genious strikes, *no matter what application you're in*, this information manager is ready and waiting. Arrange your ideas by topics and subtopics. You can even search and sort. When you're ready to write your thoughts, *Acta* is ready for you.

Symmetry's Acta 1.2
(not copy-protected, for 512, 512E, MacPlus) **$38**

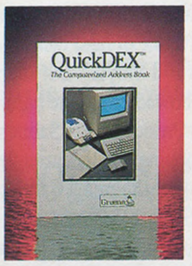
Tip Sheet.

Name: Rick Gilligan

Claim to fame: Scored a point a minute (41 total) in his best game for our championship basketball team.

"People are always telling us—they just don't know how they ever got along without a Mac in the first place. Well, the same is true for people who have made the leap to hard drives. Especially business users—whether it's a one person or a thousand person business. Hard drives eliminate constant disk swapping and make it far easier to move back and forth between programs. Turn on the machine and you're ready to roll. The only time you'll need disks is for backups. You'll soon be wondering how you lived so long without one. Our low-cost 20 Megabyte system (see above left) is a snap to install, and if you have any questions, you can always call one of our tech specialists, toll-free."

Instant Addresses.



Load *QuickDEX* within your word processor and your address/phone file will always be there when you need it. Just start typing the name and the program starts searching. You can even write notes on each address card. The program includes over 1000 area and zip codes for major U.S. cities.

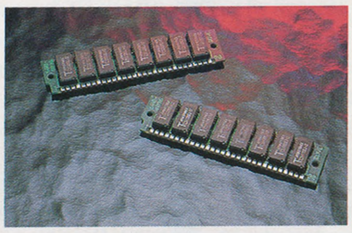
Greene, Inc.
QuickDEX 1.3 (not copy-protected, for Mac 512, 512E, Plus, SE and II) **$24**

Modem Sharer.

You can save your company a bundle with *ComServe*, because it eliminates the need for an individual modem at each Mac in your AppleTalk network. Now they can all communicate with minis and mainframes through a single modem and server Mac. Hold the hardware, hold the wires.

Infosphere's ComServe 1.0
(not copy-protected, for 512, 512E, MacPlus, XL, SE & II)......... **$129**

RAM Double.



One of the best things about the Mac is that so many applications work together so smoothly—if you have enough memory to keep them all together at the same time. Dove Computer makes a full line of memory upgrades for all flavors of Macs. The *MacSnap 2s* is specifically designed to increase the amount of RAM on a Mac Plus or SE from 1 Mb to 2.5 (expandable to 4 Mb). Not only can you fit more programs into RAM, but the bundled RAM disk utility greatly enhances your operating speed.

Dove Computer
MacSnap 2s ... 90 days. $699

You dirty rat!

Who knows what evil lurks in the heart of your mouse? Who wants to know? The *Mouse Cleaner 360° Kit* will eliminate dirt, debris, and other notorious foreign elements in seconds, and keep your mouse on its perpetual roll.

Ergotron, Inc. ... 1 year
Mouse Cleaner 360° Kit $15

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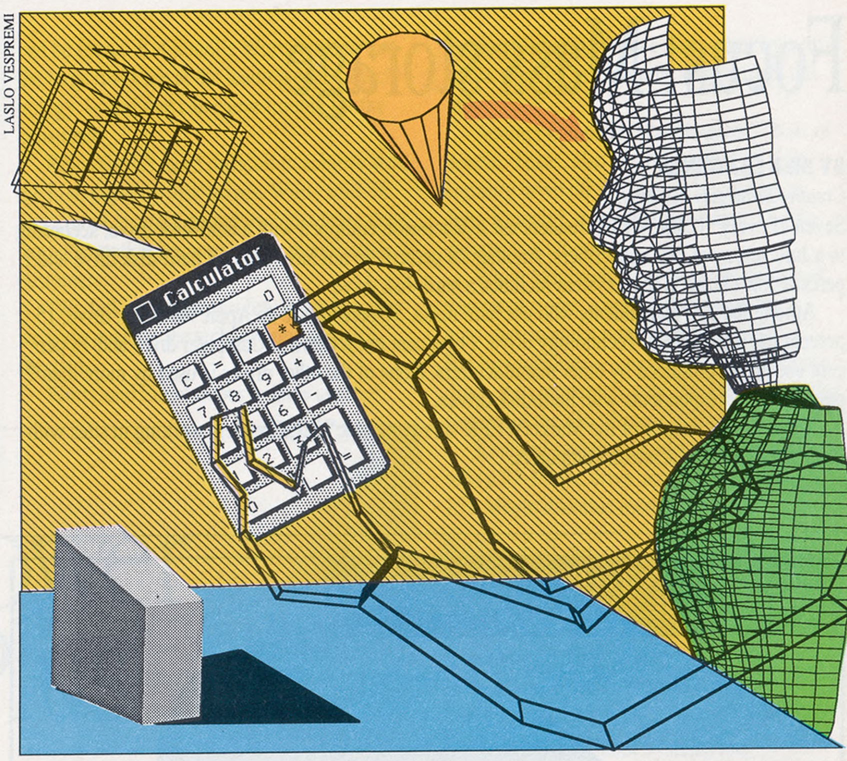
WINDOW ON ACCOUNTING

BALANCING THE BOOKS WITH EXPERT SYSTEMS



LASLO VESPREMI

The new market for utilizing expert systems in accounting will probably do well in corporate America. An executive will feel comfortable sending an inexperienced CPA out in the field when he has an expert on a floppy disk in his pocket.

BY RUSTY WESTON
MacWEEK Staff

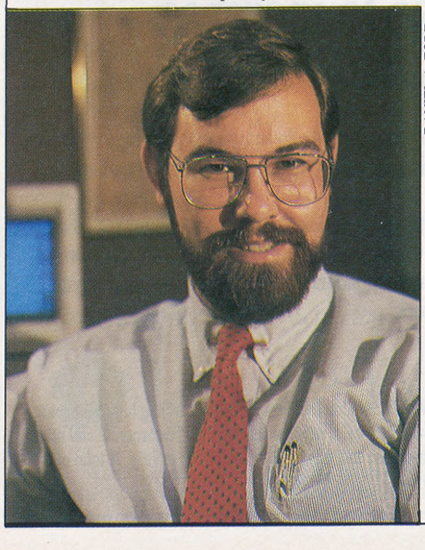
Wisdom, a philosopher once said, is what you acquire when you've been a fool long enough to know the difference.

Nobody trusts neophytes. Young lawyers may write letters, but they don't go to court. Cub reporters cover fires, but they don't investigate corruption. Rookie accountants double-check each other's computations, but they don't audit a client's books.

Depending upon your view, inexperience may be a fair rap on youth or a stale stereotype. Either way, the fledgling market for utilizing expert systems with accounting will likely play well in corporate America. An executive will be able to feel confident sending a young CPA into the field, knowing he's carrying an expert on a floppy disk in his shirt pocket.

"When you put knowledge on the individual workstation level, then what you're dealing with is a way of interactively giving the user the results of years of accounting experience," said Richard Mansfield, president of Cognition Technology in Cambridge, Mass. Mansfield makes MacSMARTS, one of about 10 shelf-ready expert systems shells for the Mac.

Western Digital's Dan Rasmus uses a Macintosh SE to customize an in-house expert system.



DANIEL A. FORT

Although it will be years until free-associating, true artificial intelligence (AI) becomes available for the accounting profession, AI is beginning to be applied today in the form of expert systems software.

Expert software enables a user, often called a knowledge engineer, to program detailed, problem-solving advice in a ready-made format. A user can then put in a list of conditions for a problem, and the program suggests a solution based upon inferences drawn from the cases and rules programmed into it.

Expert systems shell types

According to Tom Schwartz, an artificial intelligence consultant from Mountain View, Calif., there are three types of expert systems shells: rule-based, example-based and frame-based.

Rule-based systems parallel a logical chain of thinking, Schwartz said, in which experts predetermine conclusions that can be reached inductively or deductively. Facts are linked by inferences. Schwartz uses the following example to illustrate rule-based induction: "If an animal has hair, and it is warm-blooded, then it's a mammal."

Another way to look at rule-based systems is to imagine a spreadsheet with logical conditions (such as "if … then … else") instead of numbers. If the conditions are satisfied, the expert's advice is valid. Currently available rule-based systems include Instant-Expert, a French system distributed by Human Intellect Systems of San Mateo, Calif., and MicroExpert from McGraw-Hill of Princeton, N.J.

Frame-based systems, of which Neuron Data's Nexpert is the most well-known, also follow rules but feature an object-based hierarchy for databases or actuarial tables. A frame is like a note card that is accessed through rules written about it. Frame-based hierarchies include subsets, which are good for database searches for zoology or ZIP codes, Schwartz said.

Example-based systems provide the simplest approach to expert systems development. To figure the cheapest way to send a package, for example, you preset variables like delivery time, how soon the package is needed, and the weight, size and contents of the package. Based on inputting previous cases, the program knows not to advise you to send radioactive material via Federal Express. MacSMARTS uses this approach in solving problems.

Practical use

At Western Digital in Irvine, Calif., Dan Rasmus uses a Macintosh SE to customize an in-house rule-based expert system to help a user determine whether to lease or buy a tool — a typical accounting problem. Each prototype program costs the company about $10,000, he said, adding he's not sure yet how much money the computerized expertise will save Western Digital. But he is optimistic expert systems will work for his company.

"I think a perfect application is walking people through expertise distribution," said Rasmus, Western Digital's senior policy and procedures analyst. For example, "If a computer board resistor is bad, you need to do this …"

Schwartz likens expert systems software to apprenticeships for young accountants.

Competitive advantages

"Every major accounting firm is seeing expert accounting systems as something that could lead to a potential competitive advantage," said Professor Ira Weiss, director of the Information Systems Research Center at the University of Houston.

"Just as the printing press gave man the ability to manufacture books, which disseminate low-cost but static information," said Schwartz, "expert systems can be viewed as a printing press distributing low-cost interactive knowledge."

Expert systems technology is expected to relieve users from repetitious accounting work. But the best expert system for accounting is not prepackaged advice on a disk, at least not yet.

Big Eight research

The Big Eight accounting firms (Peat Marwick Main & Co.; Arthur Andersen; Coopers & Lybrand; Ernst & Whinney; Price Waterhouse; Arthur Young; Deloitte, Haskins & Sells; and Touche Ross) are on the cutting edge of the development of this new software tool, but none have packaged the ultimate tax advice into a single program that would render themselves redundant. The Big Eight reportedly pour $200 million annually into R&D of smart software. None has made a substantial return on the investment.

In theory, an accountant's time is better spent advising a client on taxes, rather than calculating or auditing financial records. Yet the Big Eight firms say they won't abandon accounting work until bookkeeping becomes wholly automated — an innovation said to be a decade away.

"We are currently developing software with an expert systems component to it for use by clients and non-clients," said Tom Worsi, a partner in charge of Price Waterhouse's Menlo Park, Calif., research facility. The research is aimed at testing the utility of expert systems on auditing, consulting and tax services. At the lab, Mac SEs and IIs are used along with IBM PCs and compatibles.

"We're trying to understand how we can use this technology to improve our efficiency," Worsi said. "We believe we see a real need in the marketplace for the service."

He also said he sees a lot of money and research aimed at this arena "because people believe this is a fertile territory.

"Arthur Andersen is the key player in the accounting field at this time. They have their own AI lab, chock full of young MIT kids helping them develop expert systems for accounting and consulting. I think they've spent at least $15 [million] to $20 million — and have no product to show for it on the market. But that's not to say they don't have internal products," he said.

The human factor

One obstacle to acceptance of the expert systems accounting software is the human factor.

"It's more than building just a rule-based system that works for a consulting service," said Di Schwartz of Mountain View, Calif., author of the book "PC-Driven Expert Systems."

"There's a social aspect of expert systems that hasn't been addressed. It's human nature that clients may not want to pay as much for a robot to do their accounting," she said.

Nevertheless, said Stephen Burakoff, president of Layered Inc. in Boston, manufacturer of Insight, a series of Macintosh accounting packages. "The big firms are forcing their clients to automate. There are so many people supplying financial statement preparation, the only way the bigger guys can compete is by automating small business," he said. "The big firms want to get out of the accounting business. The competition [among the Big Eight] will be in the quality of advice provided."

Burakoff said he realizes his Macintosh accounting systems are up against stiff competition from the new technology, so he is gradually steering Layered programs toward greater built-in expertise. "The end-all, be-all in expert systems is too expert for most businesses," he said. "You take a business in which they've never had any automation, and all of a sudden the computer is telling them what to do and is providing reports they've never seen. I don't think users want a sledgehammer that tells them what to do. There's an educational curve, which Insight provides."

"To date, nobody has really put an accounting package together that translates accounting data into financial terms," said Bob Gifford, vice president of development for Great Plains Software in Fargo, N.D., which markets Great Plains accounting software. Interpretive reports "seem to be the next logical phase for accounting products to move toward."

Everyone interviewed for this story either uses or is familiar with Mac accounting software and expert systems, and all said they agree that Apple lags behind IBM PCs and compatibles in the application of expert systems to accounting.

The lag primarily reflects the installed base of Macs in business compared to IBM PCs and compatibles, the sources say. The Mac advantage is ease of use, but a developer is more likely to ignore that and write for a larger market, although the relative power of the Mac II has piqued the interest of more than a few developers.

Limitations of expert systems

"Expert systems that have value are not all that simple," said Price Waterhouse's Worsi. "There are a lot of toys around with shallow knowledge. The limitations of shells is that the ones available generally are useful only in very narrow domains."

Weiss agreed: "Expert systems are good at doing specific, narrowly defined tasks but not at attacking broad-based problems."

"I think expert systems by definition will always be domain-specific," Schwartz said. "The power of an expert system is that an expert can disseminate knowledge to more than one user at a time."

She suggested users buy the least expensive version of the expert systems technology the first time around. "A user needs to define what kind of task he wants to accomplish," said Schwartz. "The task should be fairly narrow, something that could be explained to a coworker in a 20-minute telephone call."

Once the task is focused, the user may find he can accomplish it with a lower-priced tool. "For example, if he isn't a real strong programmer, then MacSMARTS won't be as intimidating as Nexpert, which takes a couple of weeks of training," she said.

"The idea of who we hire and how we hire could change in the face of this technology," said Worsi. "We're working internally to develop training for the internal education of our staff in the area of expert systems. We're giving some this year as part of our formal training."

"Expert systems is definitely raising standards in every industry where it's been introduced," Schwartz said. "Good tax guys are the ones who figure out where to find the most deductions. An expert system can certainly raise the same questions. That raises real issues among employees and human resource people because there are cases where companies have reduced head count after using it. People can put themselves out of work."

"The jury is out on whether we'll ever reach a point where we don't have some expert's intervention in the final decision," Worsi said. "I'm not convinced we'll ever completely replace the auditor or the consultant. But we can provide him with an advisory system."

Burakoff predicted that expert systems "will focus accountants on providing real value rather than simple number crunching."

Worsi agreed: "We'll never replace high-level accounting." ■

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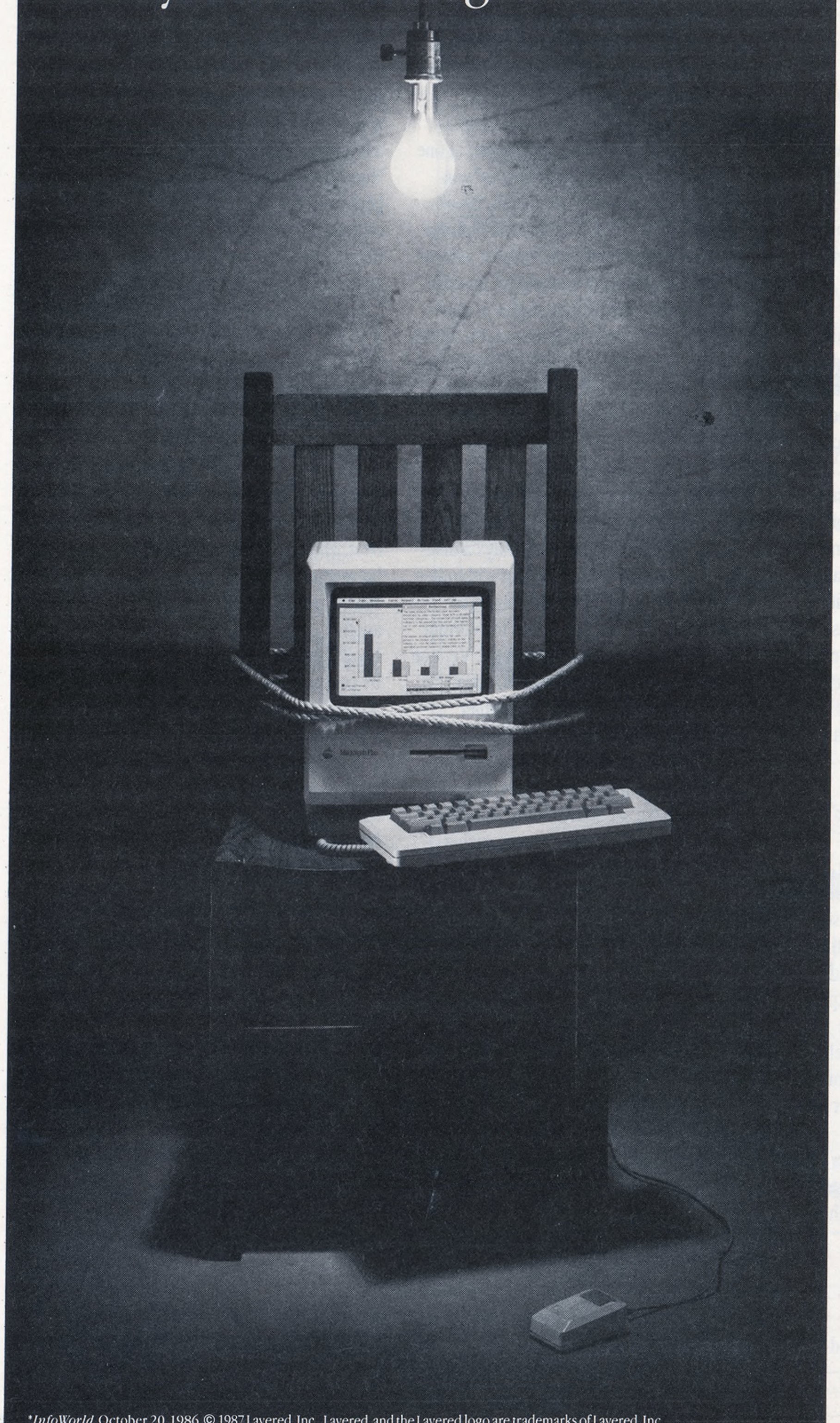

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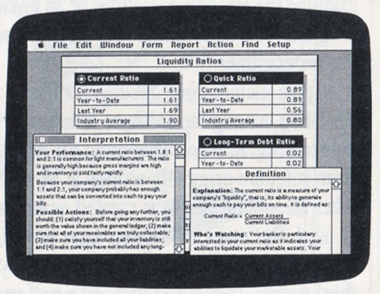

Liquidity Ratios

● Current Ratio	
Current	1.61
Year-to-Date	1.61
Last Year	1.69
Industry Average	1.90

○ Quick Ratio	
Current	0.89
Year-to-Date	0.89
Last Year	0.56
Industry Average	0.80

○ Long-Term Debt Ratio	
Current	0.02
Year-to-Date	0.02

Your Performance: A current ratio between 1.8:1 and 2:1 is common for light manufacturers. The ratio is generally high because gross margins are high and inventory is sold fairly rapidly.

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Possible Actions: Before going any further, you should: (1) satisfy yourself that your inventory is still worth the value shown in the general ledger; (2) make sure that all of your receivables are truly collectable; (3) make sure you have included all your liabilities; and (4) make sure you have not included any long-

Explanation: The current ratio is a measure of your company's "liquidity", that is, its ability to generate enough cash to pay your bills on time. It is defined as:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

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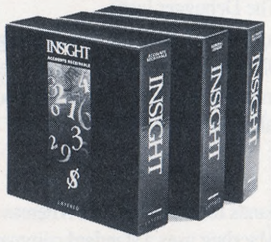

INSIGHT
ACCOUNTING SOFTWARE BY LAYERED

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TeXtures excels at long page-layout documents

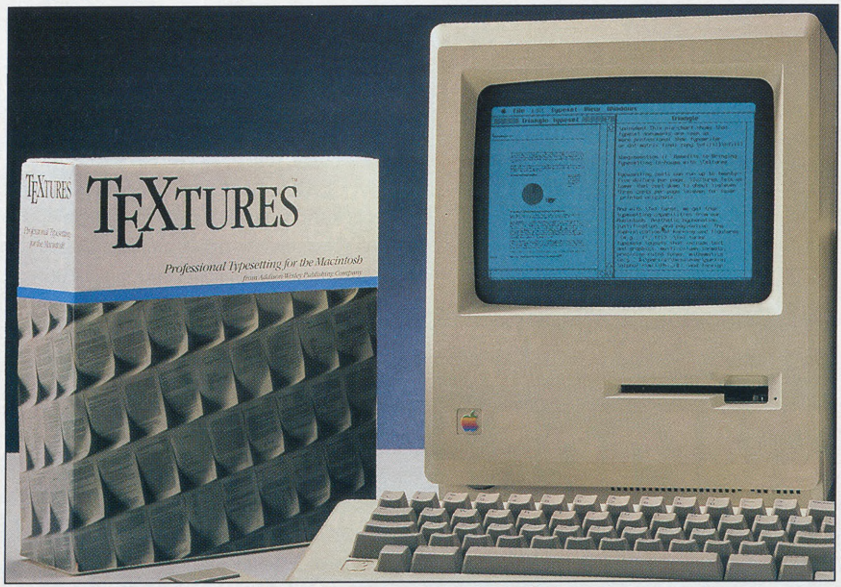
BY JIRI WEISS
MacWEEK Staff

BOSTON — Addison-Wesley has introduced a Mac version of a powerful, non-WYSIWYG desktop-publishing package that still takes advantage of the Mac's unique display capabilities. The $495 TeXtures is designed primarily to handle long technical documents.

TeXtures is a non-WYSIWYG publishing system based on TeX, a typesetting language primarily used by scientists and engineers in universities and corporations to typeset their documents.

TeXtures works very differently from familiar desktop-publishing programs that immediately display any change in style or layout on the screen.

Users of TeXtures insert TeX commands into a document and run it through a TeX compiler whenever they want to see what the document will actually look like.



COURTESY ADDISON-WESLEY

Addison-Wesley's TeXtures desktop-publishing package makes formatting large documents easier.

TeXtures is better for large documents, such as books, than desktop-publishing programs that display all changes on the screen immediately, according to Brian Skidmore, publishing product-line manager. "Interactive packages work for short documents under 30 pages. But they don't work well if you are working on a 300-page book because they force you to interact with every page."

With TeX, a user only needs to change one line of text to alter the size or style of a chapter header or to change leading throughout a whole book, Skidmore said. To make text formatting even easier, users can program in their own macro commands or rely on built-in defaults. TeXtures will automatically perform functions such as justification, pagination, kerning (adjusting the spaces between letters) and hyphenation.

"It will do a lot automatically," Skidmore said. "You can tell TeXtures how big a page is in picas and inches; it figures out the best way to place the text."

TeXtures running on a Mac makes seeing the results easier than existing systems, he said.

Using TeX on a mini, mainframe or Sun requires leaving a text editor, compiling the document and printing it out. With TeXtures, users compile the document simply by making a menu selection.

The formatted document appears in a window on the screen and can be zoomed into, up to the 300-dot-per-inch resolution of the LaserWriter printer. Editing and viewing windows can be displayed on the screen simultaneously.

TeXtures operates on any Mac with at least 512 Kbytes of memory.

Addison-Wesley publishes a version of TeXtures called MicroTeX for the IBM PC. Users can interchange document files between the two systems. Because TeXtures documents are ASCII files, they can be transferred to and from almost any other computer system.

Addison-Wesley Publishing Co. is located at Jacob Way, Reading, Mass. 01867; (617) 944-6795. ■

PC EXPO

Continued from Page 3

SNA networks, and Hayes Microcomputer Products of Atlanta had its Mac modems.

A number of storage products for the Mac also could be found scattered through the two halls of the Javits Convention Center. First Class Peripherals of Carson City, Nev.; Micah of Newark, Del.; PRIAM of San Jose, Calif.; and Tallgrass Technologies of Overland Park, Kan., showed hard-drive add-ons for the Mac.

Guide Software of Bellevue, Wash., which has been marketing a hypertext data storage and retrieval program in PC and Mac versions, demonstrated how closely its upcoming Guide 2.0 revision running under Microsoft Windows on the PC can match the capabilities of HyperCard running on a Mac.

At a press conference, Guide President Alan Boyd showed a prerelease copy of Guide running seemingly identical versions of several example applications distributed with Apple's HyperCard, complete with look-alike screens.

Although admitting that the examples were hand recoded for Guide and a complete HyperCard-to-Guide translator would not be available for several months, Boyd said the Guide versions were smaller, ran faster and had more capabilities than the HyperCard equivalents.

Windows 2.0 will ship by the end of the year, according to Boyd. ■

ALDUS

Continued from Page 3

incorporate their text, charts and other graphics into any one of the templates.

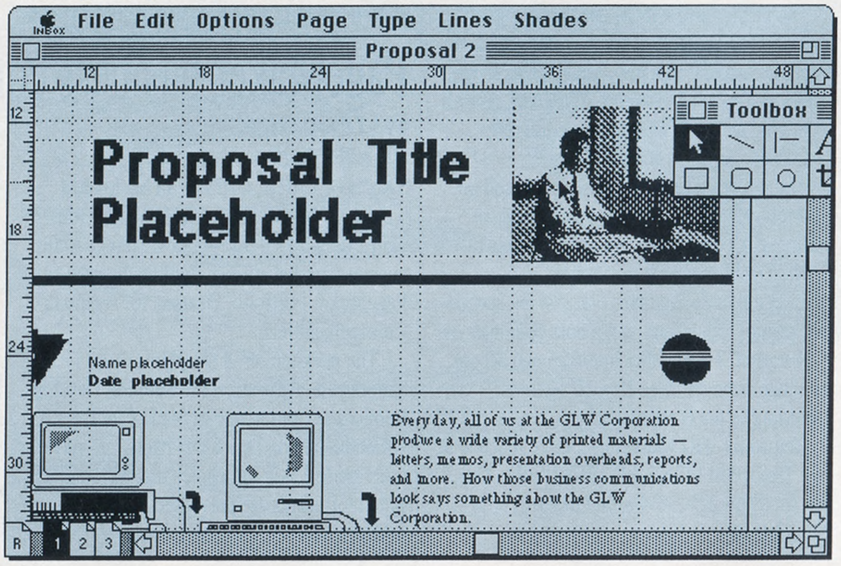
"My background is in design," Brainerd said. "And we at Aldus are concerned that our customers have the best tools to make good design possible."

Interleaf Inc.'s new Mac desktop-presentation program, Interleaf Publisher, does not have Brainerd worried. "The key is that Interleaf is aimed at the technical publishing market. And, the two products will be distributed and marketed differently."

Interleaf will be an Apple value-added reseller with a sales force of about 40. Aldus has 3,500 retail dealers, Brainerd said.

Aldus is located at 411 First Ave., Suite 200, Seattle, Wash. 98104; (206) 622-5500. ■

Aldus' templates help users with no design experience produce business documents.



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BPA membership applied for April 1987.

SEYBOLD

Continued from Page 3

art library and the ability to read directly from Lotus 1-2-3 and Symphony worksheets or graph records. The application provides output support for many printers, the Polaroid Palette and PalettePlus Computer Image Recorders, and the Bell & Howell Color Digital Imager IV.

ColorLab, from Language Systems Corp. of Herndon, Va., is slated to ship this fall. Designed for both novices and business professionals, the $495 program provides text, drawing and coloring tools for text and graphics. When used with the Mac II, the program allows 256 colors to be displayed on the screen.

Other features include the show-through option, which allows objects to appear to be transparent, and the ability to use the mouse as a remote controller during presentations. Black-and-white paper output and transparencies can be printed on a LaserWriter printer, and color presentations can be made by photographing a color screen or by using a film recorder.

Several companies saw the Seybold conference as a chance to announce updates or shipping dates of previously introduced products. Management Graphics Inc. of Minneapolis, Minn., is now shipping Easy Slider, a software package that links Mac PICT files with high-resolution digital-imaging equipment. Easy Slider, $149.95, can be used to color and position graphics created in MacDraw, Cricket Draw and Cricket Graph in film recorder format.

Easy Slider includes Slider Talk, a communications utility that allows completed files to be transmitted to an imaging center.

Thought Leaders of Stamford, Conn., and 20/20 Data Systems Inc. of Austin, Texas, announced updated versions of their desktop-presentation products.

Thought Leaders' Visual Presentations System 2.2, a more specialized product than other offerings, runs on the Mac Plus and SE. The $6,250 program is used for high-volume report production in professional service firms. Also referred to as ViP, the program primarily provides design libraries of charts and diagrams.

20/20 Data Systems' product, the Carousel Color Slide Software 2.0, is a more mainstream application that allows users to select and match colors against MacDraw's fill and pen patterns. Once the design is completed, files are translated into the correct file format for transmission via modem to service bureaus with Management Graphics workstations and Matrix professional film recorders. Available only for the color Macintosh II, Carousel 2.0 will be available this fall for $395.

Matrix Corp. of Orangeburg, N.Y., also exhibited its SlideWriter digital film recorder. SlideWriter, $11,795, makes color slides from MacDraw-compatible documents, like Cricket Graph and Microsoft Excel, as well as from PICT format files and bit-mapped graphics.

SlideWriter also allows users to add scanned images, MacPaint documents and an unlimited number of fonts and colors.

MacroMind of Chicago, a developer of animation software, also made a play for the attention of desktop presenters by highlighting a new feature for its VideoWorks II program. Exhibited within both the Apple and SuperMac Technology booths, VideoWorks was used to create black-and-white and color animated "slide shows."

The OverView feature allows slide artwork created in MacPaint, PICT, Glue or VideoWorks to be combined with timers, sound clip animation and up to 24 transitions, including wipes, dissolves and fades.

MacroMind said it wants to convince users that animation is the best way to attract the attention of the audience. ■

FOR THE RECORD

In the article, "Big-screen monitors becoming cheaper?" (Sept. 1) 4SITE's Machroma Color Monitor was said to be adaptable to the Macintosh SE; in fact the monitor is for the Mac II.

4SITE can be reached at 200 Seventh Ave, Santa Cruz, Calif., 95062; (408) 425-8700.

In the article, "First accelerator board for portable Dynamac," (Sept. 1) the price of an accelerator board system for the portable Dynamac from Novy Systems Inc. that includes a 68881 math coprocessor and 1 Mbyte of memory was incorrectly reported. The price is $1,695.

In the article "Claris and Clearview discuss marketing pact" (Sept. 8), it was reported that Challenger Software Corp. of Homewood, Ill., is the developer of MacCAD. Challenger actually developed Mac 3D; MacCAD was developed by CompServCo of Slidell, La. ■

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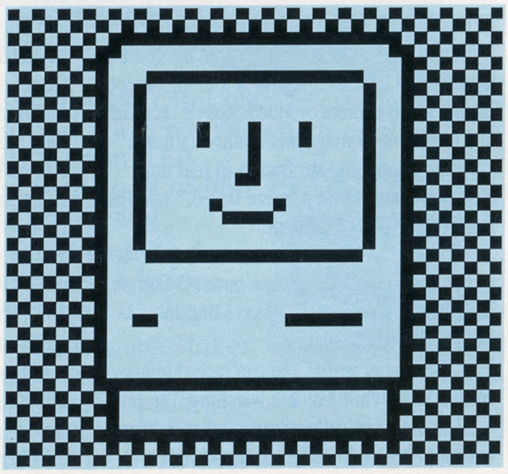

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COURTESY PIXELOGIC

Pixelogic President Paul Ramos: "The beauty is you can record images from a VCR while you are watching."

Digitizer captures moving video

BY JIRI WEISS
MacWEEK Staff

STONEHAM, Mass. — Pixelogic has recently started to ship a video digitizer that the company says will take an image of a moving object from a video camera or videocassette recorder and turn it into a magazine-quality halftone.

"The digitizer grabs frames in real time. You don't have to do a freeze frame," said Paul Ramos, company president.

"To save an image you are viewing on the monitor, you click the mouse button," Ramos said. Successive clicks will save multiple images directly to disk.

"The beauty is that you can record images from a VCR while you are watching," he said.

The digitizer, called Proviz, takes a video image — both odd and even frames taken at one-thirtieth of a second — from any source, whether it's a VCR or a color video camera.

Proviz, which sells for $1,595 and is about the size of an external hard-disk drive, converts the image to a native compressed file format, a 4-bit compressed gray scale, Ramos said.

Each image file, approximately 150 Kbytes in size, contains information on 17 levels of gray, Ramos said. It can be converted to TIFF and Encapsulated PostScript files that can then be edited with software such as Image Studio from Letraset of Paramus, N.J., and imported into desktop-publishing programs such as PageMaker from Aldus Corp. of Seattle and XPress from Quark of Denver, Ramos said.

Images also can be output directly to a LaserWriter or Linotronic 100 and 300 without editing, Ramos said. "We can then assign with our software the halftone screen parameters, 133-, 85-line, whatever you want, including the angle and percent black."

Proviz includes a proprietary processor, 150 Kbytes of RAM and control knobs that are used to adjust image brightness and contrast. It attaches to the SCSI port of the Mac at one end and the video source at the other.

Pixelogic recommends that Mac Plus and SE users attach a small composite monochrome monitor to see the gray scale of the pictures coming in, Ramos said.

Pixelogic is located at 38 Monvale Ave., Stoneham, Mass. 02180; (617) 438-5520. ■

Phoenix Technologies buys Softstyle

NORWOOD, Mass. — Phoenix Technologies expanded the range of its peripherals compatibility business with the purchase of Honolulu-based Softstyle Inc. late last month.

Phoenix, known for being one of the first companies to clone IBM's PC ROMs, is one of several companies currently developing implementation alternatives to the PostScript page-description language from Adobe Systems Inc. of Mountain View, Calif.

The Softstyle acquisition bolsters Phoenix's expanding presence in the peripherals compatibility business, according to Lance Hansche, vice chairman and president of Phoenix.

Softstyle is a 5-year-old company specializing in software technologies for peripheral operation environments. The company's products support more than 100 printer and plotter models, including a complete line of Macintosh printer-driver software.

Craig Slayter, Softstyle's co-founder and former president, will head Phoenix's Peripheral Systems Division. Softstyle is best known for printer drivers like PrintWorks, he said. "We're pleased to see their commitment to expanding peripherals to the Mac," Slayter said.

Phoenix provides systems software and hardware engineering products and services to OEMs in the peripherals market. ■

SNAPSHOTS

50 stackware applications expected in new Heizer catalog

PLEASANT HILL, Calif. — Hoping to ride the first wave of stackware that rolls into retail shores, Heizer Software will release a catalog of HyperCard applications this fall.

The catalog, called Stack Exchange, probably will offer about 50 applications in its first edition, but the company said it expects much more stackware to eventually flow through its doors. Available free to interested users, the first catalog probably will be available in late November and quarterly thereafter.

The catalog will include applications priced from $2 to $200.

Through its Excellent Exchange and WorksXchange, Heizer Software has published more than 500 programs for Microsoft Excel and Microsoft Works, specializing in templates, tutorials and database applications, many of them highly customized.

Heizer Software is located at 1941 Oak Park Blvd., Suite 30, Pleasant Hill, Calif. 94523; (415) 943-7667.

NuDATA utility backs up, restores files

SANTA CLARA, Calif. — NuDATA has introduced a versatile new backup utility called Omni Backup/Restore that works with any Finder-compatible storage media.

Omni Backup/Restore will back up and restore files from any storage volume to any other storage volume, including SCSI hard disks, serial-port hard disks, tape drives, removable media and network volumes.

Users are given options for scripting, automatic backups and time-delayed backups. The time-delayed backup allows a user to conveniently back up a day's work during the middle of the night.

The program offers the flexibility of global, incremental or file-by-file backup and restore options with a simple interface that provides comprehensive file and folder hierarchy for easy viewing and file selection. Users also can generate a printed report of file and folder hierarchies to review the file contents of any storage volume.

Omni Backup/Restore is bundled with NuDATA's complete range of Apple-compatible products, including hard disks, tape backups and file servers.

Omni Backup/Restore sells individually for $99.95 and will run on a Mac Plus, SE or II.

NuDATA is located at 3206 Scott Blvd., Santa Clara, Calif. 95054; (408) 727-1049.

Mac graphics, text coming to video

PORTLAND, Ore. — Road Runner may not run on a Macintosh II screen just yet, but an add-in board to start shipping Oct. 1 can be used by video producers to overlay the Mac's graphics and text on video.

The $599 TV Producer may be used to put in titles on video and even to generate animation. It provides a cheaper and more flexible alternative to title generators, according to Computer Friends, the board's manufacturer.

TV Producer contains a demodulator that works with the Mac II video board, superimposing whatever appears on the Mac screen on an incoming video signal.

Users can assign a particular color to be transparent to the video output, the company said. In this way the Mac background need not, for example, appear on the video. Users can quickly and easily switch transparent colors for special effects, the company said.

TV Producer is accessed through a Desk Accessory.

TV producer can be used either to manipulate incoming video or to record the image on the Mac screen in NTSC (the North American Broadcast Standard) format.

Computer Friends recommends that dealers install the card because soldering is required.

TV Producer will be available starting Oct. 1.

Computer Friends is located at 14250 NW Science Park Drive, Portland, Ore. 97229; (503) 626-2291.

GraphicWorks price going up, manual revised

NORTHBROOK, Ill. — Anyone intending to buy GraphicWorks 1.1 should do so before Oct. 1, when Mindscape Inc. plans to increase its suggested retail price by almost 50 percent.

The program is still available at the introductory price of $99.95 during September, but once the month is out, GraphicWorks will sell for $149.95.

A completely revised manual with a full index and a spiral binder will be included in the new package.

"Most of the criticism of GraphicWorks 1.1 has been directed at the program's documentation," said Kim Novak, manager of public relations at Mindscape. "In response to this consumer demand, we completely rewrote the manual, and the new version is much, much better."

GraphicsWorks 1.1 is a graphic-design program that offers advanced features such as high-level editing capabilities and flexible manipulation of scanned images.

Mindscape Inc. is located at 3444 Dundee Road, Northbrook, Ill. 60062; (312) 480-7667.

Mac graphics a hit at AIGA

BY ELINOR CRAIG
MacWEEK Staff

SAN FRANCISCO — The Macintosh as a tool for graphic designers drew some high-resolution attention at the American Institute of Graphic Arts annual conference in San Francisco last week.

Graphics luminaries such as April Greiman, a Los Angeles designer, and Paul Brainerd, president of Aldus Corp. of Seattle, presented a full spectrum of design technology possibilities to the 1,020 attendees. A hefty show of hands from computer owners and a distinguished panel of speakers reflected the major role the Mac is playing in the graphics business.

"This is the first year we have included technology with such emphasis," said Caroline Hightower, the New York director of AIGA. "It was both in response to requests from the designers themselves as well as the AIGA board anticipating the trend toward computers."

Matthew Carter, co-founder and vice president of design at Bitstream of Cambridge, Mass., moderated the technology panel presentations, which included Brainerd; Perry Jeffe, editor and publisher of the "Jeffe Report on Computer Graphics for Design"; and Wendy Richmond, a computer-design columnist and consultant whose clients include Adobe Systems Inc. of Mountain View, Calif.; Letraset of Paramus, N.J.; and Bitstream.

"Technology is the greatest force changing design today," said Jeffe. "We are beginning to have tools to solve new [design] problems; the tools give voice to the ideas."

Spinoffs from the conference brought the attendees out into the computer-graphics community of San Francisco. Suite 3D, a center for computer art and technology, held an exhibit with works from Greiman's studio and Apple, as well as works and a presentation by Lee Nelson of Landor and Associates of San Francisco. Nelson has been a leader in researching equipment and the implementation of computer technology. ■

Macintosh Solutions dives into stackware

BY CLAIR WHITMER
MacWEEK Staff

DEL MAR, Calif. — Idiot Proof Stackware made its debut last week when Macintosh Solutions passed out HyperCard stackware versions of its electronic newsletter to the San Diego Mac Users Group.

Idiot Proof Stackware is a name trademarked by Macintosh Solutions for its recently formed stackware division, manned by President Roland Burt and nine employees. The first offering from IPS is the electronic newsletter, available through the Educom catalog, GEnie and Delphi.

The newsletter includes general information about the burgeoning world of stackware, "custom trick things" about implementing code in HyperCard applications and gratuities, like buttons and sound effects including Porky Pig's "Thththaaat's all folks!" and David Letterman's breaking glass. The sounds and buttons can be imported into the reader's stackware.

Although the newsletter and some other offerings will be free, IPS also plans to address the commercial end of the stackware business. The company's first official product is the Plant Encyclopedia, aimed at nurseries and landscape artists.

Burt said the program is completed, but the final version is waiting for months of data input, including scanned images of the plants in the encyclopedia and all the information needed to grow them. The applications also include inventory and pricing sections. A free demonstration version will be available around the end of the month, and the final version is expected to be priced at less than $100.

Burt had been doing many of the tasks for the Plant Encyclopedia with another hypertext program, Guide from Owl International of Bellevue, Wash. He switched to HyperCard when it was released because "it's very easy to use and it's 10 times better," he said.

Burt speaks with the enthusiasm of a hobbyist, saying he doesn't expect to make any money on his stackware projects. He said he puts energy into them because "it's more pleasurable to help people with this than to worry about the money side of things." But IPS is not entirely an altruistic venture. Burt is already planning another commercial project, a "real estate office management" stack.

Macintosh Solutions is located at 241 12th St., Del Mar, Calif. 92014; (619) 481-0479. ■

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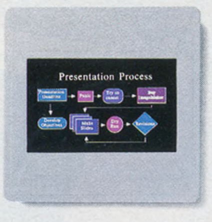

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Disaster management on a Macintosh

BY JONATHAN LITTMAN
MacWEEK Staff

CUPERTINO, Calif. — Apple is beginning a full-scale offensive to win government contracts for the Macintosh at fire stations.

Apple hopes FIREAID, from FIREAID of Modesto, Calif., and FireLink, from Apple, two of a number of applications geared toward the problems of government, will endear the Mac to local, state and federal agencies.

FIREAID includes a Macintosh Plus, a 20-Mbyte hard disk, an ImageWriter II and a 1,200-baud modem. Software modules called Scene and Base provide the ability to evaluate the site of an incident and then click on a graphic database representing hazardous materials or chemicals. The package also includes MacWrite, MacLightning and custom MacProject templates. The package sells for $5,995 or $1,800 for just the software and manuals.

The program is designed to improve the ability of officials to make decisions in a crisis by providing a graphic database of disaster areas, including the location of access roads, nearby hazardous materials, vehicle entrances and exits, and wind direction.

Apple's own fiery application was announced at a recent meeting of the International Association of Fire Chiefs (IAFC). FireLink is geared toward the less dramatic but equally critical side of fire fighting: information management.

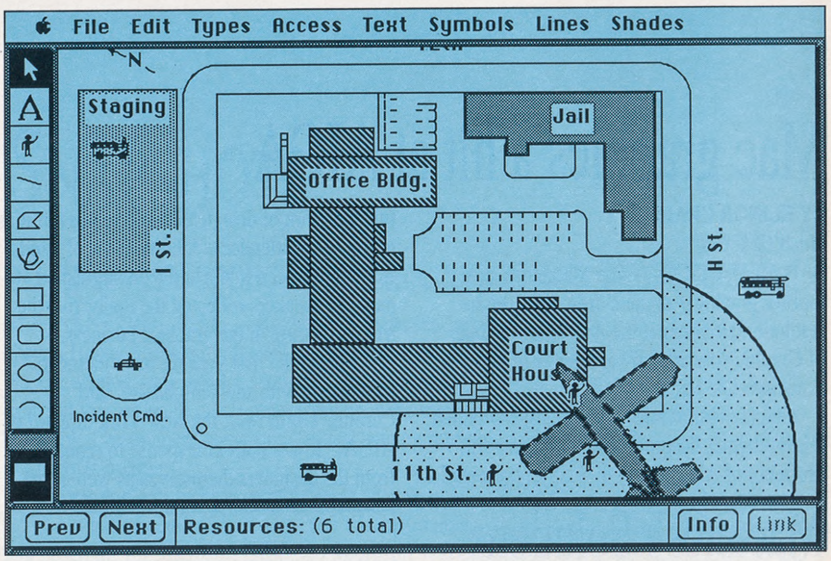
Co-developed by Apple and FIREPRO Inc. of Wellesley Hills, Mass., FireLink is a $495 integrated program based on Microsoft Works. The application will be marketed through the IAFC, a Washington professional organization representing senior fire service management.

FireLink is the first product developed by Apple exclusively for local government. "By bringing together authorities within the IAFC and professionals from the fire service industry, we were able to gain a real understanding of the special needs and unique challenges fire service administrators face," said Nancy Sperry, Apple's state and local government market development manager.

FireLink requires a computer with two 800-Kbyte disk drives or a 20-Mbyte hard disk, a printer and a modem.

FireLink allows firefighters to easily store and access information about hazardous materials, code violations, hydrant capacities and prefire plans for use on the front lines.

FIREAID can be reached at P.O. Box 3144, Modesto, Calif. 95353; (209) 523-8966. For information about FireLink, call the IAFC at (202) 833-3420. ■



Apple hopes disaster-management software like FIREAID and FireLink will help it win government contracts.

High-resolution color halftones with Mac II

BY JIRI WEISS
MacWEEK Staff

BERKELEY, Calif. — Starting in January, anyone with a Mac II that has at least 4.5 Mbytes of memory will be able to take color images from 35mm slides and produce high-resolution halftones, said Barneyscan Corp.

Barneyscan's product can scan images at 1,000 lines per inch with 256 gray levels, according to the company. The images can have resolutions from 512 by 760 pixels to 2,048 by 3,040 pixels.

The resolution is good enough to get a magazine-quality picture up to 4 inches by 6 inches in size, said Stan Loll, the company's director of market development. With larger images, the quality begins to deteriorate.

The scanned image can be cropped with software included with the scanner; editing will require other software packages, Loll said. Barneyscan takes 53 seconds to scan a slide. Color output takes three passes. Images are stored as TIFF format files; other formats also will be supported, depending on what future color page-layout programs require, Loll said.

Users cannot see the scanned image in full color, which makes it difficult to do any color correction, according to Loll, but this problem will be solved with the 24-bit color video boards now under development.

Barneyscan Corp. is located at 1198 10th St., Berkeley, Calif. 94710; (415) 524-6648. ■

Barneyscan's scanner will allow users of Mac IIs with 4.5 Mbytes to produce high-resolution color halftones.

COURTESY BARNEYSCAN CORP.

Apple tries to break Chinese language barrier

BY CLAIR WHITMER
MacWEEK Staff

HONG KONG — Apple has a very good chance of capturing the largest market in the world, according to Timothy Huang, an expert on Chinese computing.

But, he said, substantial changes to Apple's recently released Chinese operating system must be made first.

Apple released the operating system, Zhongwen Talk, earlier this summer to be marketed only in Asia. Although Huang said he has some serious reservations about the accuracy of its character formation, he also said Apple's system is the first that has been "worth my time to criticize."

Huang has been looking for the perfect Chinese computer since he was in college and has always been confronted with the irony that the culture that devised the abacus has been neglected by modern computer technology. He has written an article about Chinese computing for Dr. Dobb's Journal of Software Tools and is writing a book on the subject.

If a Chinese computer is perfected, Huang estimates the market could be as large as 400,000 computers sold per year in Taiwan alone. In Hong Kong, the demand would be as high as 700 computers sold within the first month, according to Huang. "The market is tremendous. When I start thinking about it, it's almost mind-boggling," said Huang.

Huang uses both Apple's simplified (modern) and standard (traditional) character sets on the Macintosh, but he still describes the machine as "almost usable" rather than a real answer to his needs.

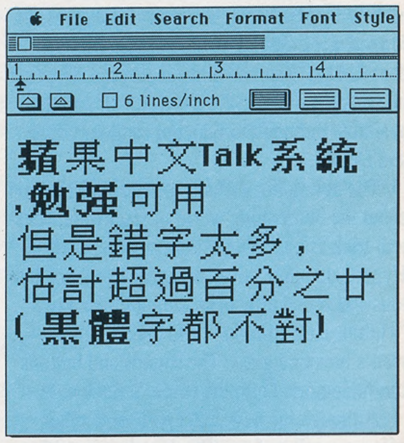
Huang said the machine can include about 13,000 characters in its dictionary. He said that although the Chinese language contains approximately 74,000 characters, this is adequate because 97 percent of daily usage is comprised of only 5,000 characters and only another 20,000, mostly proper names, are used regularly. In addition to the large number of characters, there are many homonyms and ways of forming characters.

Huang's main complaint about Zhongwen Talk is the inaccuracy of the character formation, which he estimates affects about 20 percent of the characters the Mac can include in its dictionary.

He attributes the problem to the low resolution that limits a character to 16-by-16-pixel resolution. The resolution per character would have to be doubled to 32 by 32 pixels to obtain the required accuracy, according to Huang.

Another major problem is the program's inability to write vertically. "I have yet to see a word processor that allows you to write vertically. But when was the last time you saw a Chinese newspaper with horizontal type?" Huang said.

Although he hopes that a Chinese entrepreneur with a native's understanding of Chinese culture will supply the Chinese market with a computing solution, Huang said: "I have great confidence that Apple could get the job done right. Apple definitely has the best chance." ■



蘋果中文Talk系統
,勉強可用
但是錯字太多，
估計超過百分之廿
(黑體字都不對)

Apple is setting its sights on the vast Chinese market.

Apple adds Chromaline to its venture-capital crop

BY RUSTY WESTON
MacWEEK Staff

LOS ALTOS, Calif. — This much is known about Chromaline Technologies Inc.: They did not gather Apple, the Rockefellers and Rothschild Unterberg to forge a fruit-packing investment alliance.

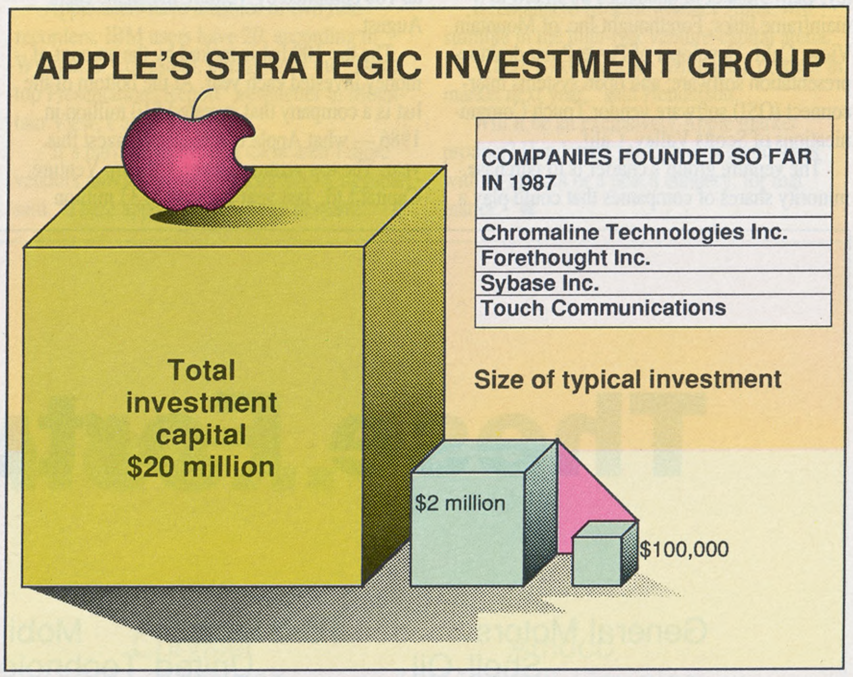
"Would you believe we can apricots?" said Chromaline co-founder Wes Henderson, joking.

Don't believe it. Chromaline, the least-known of Apple's four 1987 strategic venture-capital investments, is said to be making a 35mm desktop film recorder for presentation graphics. The product reportedly takes a picture of a PC screen and turns it into a slide.

But since other products do that, it remains to be seen what Chromaline's slant is on the market. The Los Altos, Calif., company will release its mystery product with great fanfare next year, according to Henderson.

"Chromaline is at the product-development stage and not yet close enough to the market stage," Henderson said. "As a result, we're trying to keep a real low profile. We're not alerting people in the market we're in, so they don't know what we're doing."

Apple knows what Chromaline is doing.



And analysts say Apple is becoming a big player in the venture-capital market. Apple's stamp of approval could be worth a mint to a start-up company.

Apple's Strategic Investment Group reportedly has spent between $100,000 and $2 million per investment in 1987. In addition to the

See INVESTMENTS, Page 10

Living Videotext's Winer assumes development role

BY RUSTY WESTON
MacWEEK Staff

MOUNTAIN VIEW, Calif. — The first man to capitalize on desktop presentations for the Macintosh has given up a desk job to bring an unknown product to fruition.

David Winer, president of Living Videotext, a division of Symantec Corp., has abdicated his day-to-day management responsibilities to a well-known executive from the parent company. Winer has given up his title and Living Videotext will be operated by Spencer Leyton, formerly Symantec's vice president of business development. Leyton's new title is general manager of the Living Videotext division of Symantec.

Winer will not have a title. "It's not an important part of this scenario," said Kandes Bregman, a Living Videotext spokeswoman. "He will focus on developing products. When Living Videotext is ready to market those products, I'm sure we'll work closely with him."

"There's a tremendously exciting opportunity in the desktop-presentations area, and Living Videotext has all the technology to create an original product just as unique as ThinkTank," Winer said. "It's impossible for me to guide the development of that product with the management responsibilities that I

See WINER, Page 10

Japanese outlook influences Sculley's plans

BY RUSTY WESTON
MacWEEK Staff

CUPERTINO, Calif. — The example of Japanese corporations has convinced Apple that the way to secure growth is to create a group of small companies.

The concept of spinning off parts of Apple into separate, specialized companies like Claris Corp. (for software) originated in the Orient, according to John Sculley, Apple's president, chairman and CEO, in his new book, "Odyssey: Pepsi to Apple … A journey of adventure, ideas and the future." Three possible spinoffs cited by Sculley in his book are systems products, engineering and industrial training.

"In design and philosophy," wrote Sculley in the book's chapter about spinouts, "Apple has been guided by the Japanese. The essential Japanese outlook toward the world is to reduce it in order to understand it, express it and manipulate it."

Apple may draw some of its inspiration from one of its OEMs, Toshiba Corp. of Tokyo. Toshiba owns Tokyo Electric Co., maker of the ImageWriter printer, plus small and large shares of more than 60 other companies. Toshiba has diverse interests, including stereos, computers, optical devices, ceramics, music and engineering.

"The environment in Japan is everyone is built into a group," said Peter G. Wolff, vice president of Prudential-Bache Securities in Tokyo. "In contrast to U.S. companies, with parent and subsidiaries, management control is much more integrated in Japan. In Japan the parent company will send some senior managers down to the subsidiary to retire them."

The situation at Apple is unique, according to securities analyst Michael Orsak of Robertson, Colman & Stephens in San Francisco. "I'm sure there are cases where a company was spun out of an existing division to give it more freedom, but Apple is setting up a new group. The normal spinouts are usually established groups in the company."

Spinouts "may be one of the most exciting alternatives for a company like Apple," Sculley wrote. "Because we believe that interdependencies — networks of smaller companies — are a major source of strength, we are spinning out from the Apple mothership new ideas, new business directions in the form of new companies."

"I personally think this will be done sparingly," said Paul A.D. Evans, vice president of S.G. Warburg in San Francisco. "I think there is a bias on Wall Street against companies that have minority interests in a whole lot of companies, because the sum of the parts is always more than the whole.

"If Apple runs a lot of spinoffs, you'll find the valuation of the spinoffs won't be fully reflected in the price of Apple stock," Evans said. "That creates a sense of confusion."

Evans concluded that Apple is unlikely to spin off a new company until Claris becomes successful.

Indeed, Apple's spokesmen say no spinouts lurk on the horizon. "They can't spin out R&D or marketing or finance or manufacturing,"

See SPINOUT, Page 10

Apple restructures national sales team

BY RUSTY WESTON
MacWEEK Staff

CUPERTINO, Calif. — Apple has announced a restructuring of its national sales management team, highlighted by the defection of a high IBM official.

In a year of record growth for Apple, the U.S. sales management team has been decentralized into three geographic regions. The company said the restructuring will bring sales resources and decision making closer to customers.

The company enticed an experienced IBM sales executive, Harold D. Copperman, to run its newly formed Eastern operations group. Copperman, 40, formerly IBM's director of marketing for higher education, was named vice president and general manager of the new division.

William B. Coldrick, 45, was named vice president and general manager for the Western operations group. Coldrick, formerly Apple's director of U.S. field sales, had been responsible for all domestic sales activities.

The vice president of Midwest operations will be named soon, according to the company. The Midwest chief would become the 13th corporate vice president, said spokeswoman Marianne Lettieri.

The new regional vice presidents will report to Charles M. Boesenberg, Apple's senior vice president and group executive for U.S. sales and marketing. The company is hiring 25 percent more sales staff but will not disclose exact figures, Lettieri said.

"Apple's rapid sales growth, especially in major metropolitan areas, requires us to expand the capabilities of our field organization if we are to continue to meet this goal," Boesenberg said. "Appointing these two seasoned executives as corporate officers located with specific sales regions is intended to do just that."

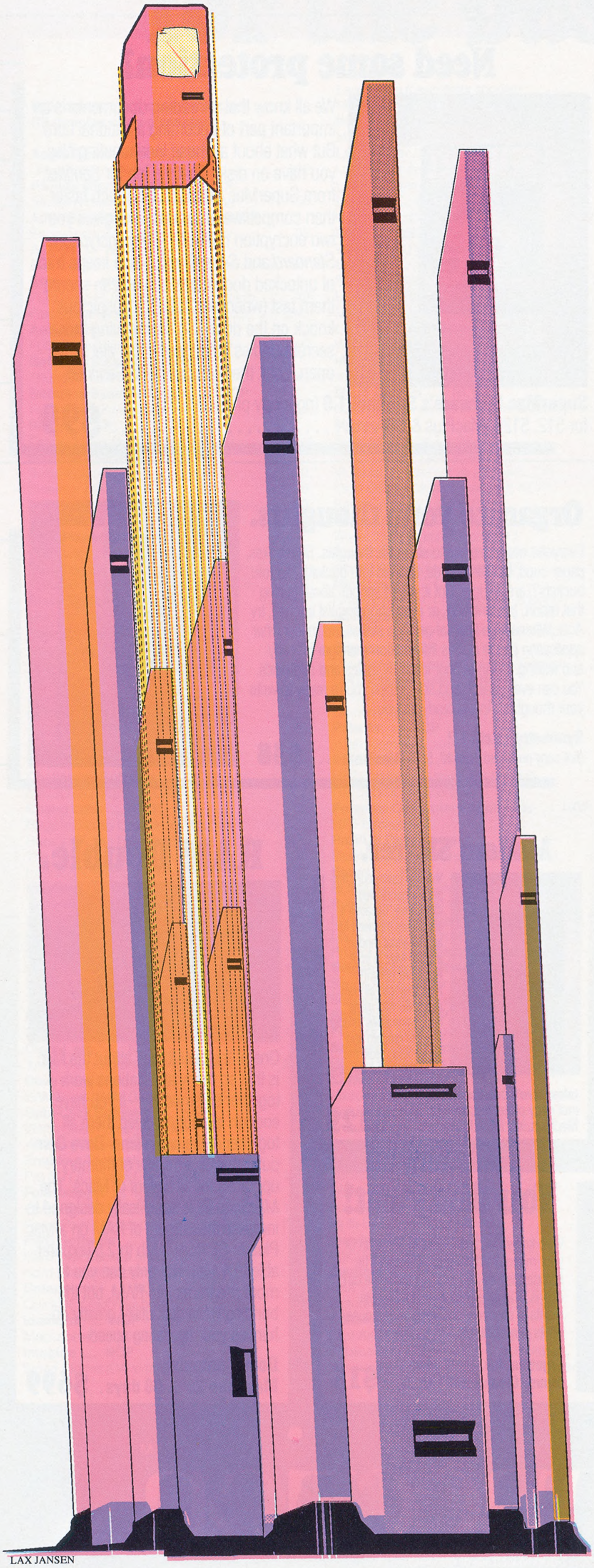
Boesenberg also was wooed away from IBM.

Apple analyst Michael Orsak of Robertson, Colman & Stephens in San Francisco said hiring Copperman is a reflection of the direction Apple is taking.

"Now they are hiring people with heavy-duty computer backgrounds," Orsak said. "And since Apple's focus is now a more sophisticated audience, it means times have changed."

Copperman has 20 years of experience, including responsibility for marketing and sales of all IBM products sold to higher education, including workstations, mid-range systems, supercomputers, data communications and software.

Coldrick joined Apple in 1982. He spent 12 years at Honeywell Information Systems, including a stint as regional marketing director. ■



LAX JANSEN

WINDOW ON MASS STORAGE

TOWERS OF COMPUTER POWER

Growing user requirements have created a fiercely competitive market for vendors

BY AVERY JENKINS
Special to MacWEEK

Like the proverbial weed, the mass storage market for the Macintosh keeps growing in terms of increased capacity and the number of vendors supplying hard-disk drives. Recently introduced high-capacity storage systems, such as the Giga Tower from NuDATA of Santa Clara, Calif., signal that vendors are eager to feed what they see as users' insatiable appetite for ever greater amounts of storage space.

There is also a growing rift in the mass storage products available to users. Manufacturers of these products tend to provide small capacity drives, such as 30 or 40 Mbytes, or very large disks, ranging from 160 to 230 Mbytes. The middle ground is increasingly being left open for what may be sound economic reasons for both the supplier and the consumer.

The fierce battle to supply users' mass storage needs has even forced some companies out of the fray. For example, Softworks Limited of Chicago once sold a line of hard disks ranging from 11 Mbytes to 170 Mbytes. But six months ago, the company bowed out of the hard-disk market, Softworks President Bob Salita said.

Prices were dropping and the struggle for market share was overwhelming, Salita said.

"It was too difficult to compete against some of the other people," he said. Instead, the company is now focusing on its software sales.

Salita added that Softworks' hard-disk sales were "not quantity-oriented."

Low-end price erosion

His statement reflects the concern other mass storage providers have expressed about a continuing erosion of prices on the low end of the hard-disk market. Prices for smaller capacity hard disks have dropped substantially, cutting the profit margin on these products.

Just as large grocery chains, which can afford a profit of pennies on their items, have shouldered out the old "mom and pop" grocery stores, it appears that only those suppliers that can sell on a very large scale will continue to compete in the low end of the mass storage market.

Virginia Wurts, sales manager of Sunol Systems Inc. in Pleasanton, Calif., said her company's biggest problem is "the erosion of prices." When Sunol was one of the few Macintosh hard-disk vendors in the market, it was relatively easy to maintain a profit. Now, however, many of the small-size disks available are selling for only $5 over cost, Wurts said, adding that "you can only do that for so long."

The smaller income results in fewer dollars spent on development of new products and the support of existing ones, and a company can quickly lose its competitive edge, she added.

"We don't want to get caught in the bringing down of prices," Wurts said. "We are going to keep our eye on that."

In addition to increased competition, changing user needs are contributing to lower costs for smaller disks. In the early days of personal computing, 5 Mbytes was a good-sized amount, 10 Mbytes was as much as anybody needed and 20 Mbytes was an embarrassment of riches suitable only for systems developers.

Today, 10 Mbytes may barely be enough room for a user's applications alone. An off-the-shelf Macintosh SE comes with a 20-Mbyte hard disk. And Macintosh networks can gobble up 30 Mbytes for breakfast and be hungry for more before lunch. On some larger networks, even 170 Mbytes of storage can be constricting.

Recognizing the need for more storage — and taking advantage of the capabilities of the new Macintosh computers — Peripheral Land of Fremont, Calif., recently announced new 30-, 50- and 60-Mbyte internal hard disks. The company also removed the smaller 20-Mbyte drives from the market.

"We felt that 20 megabytes was insufficient for personal use," said Leo Berenguel, Peripheral Land president.

"Of the 20-megabyte disks that we sell, the majority of the time [the users] come back for another drive," he said.

Peripheral Land is one of the leaders in the price erosion that is causing other vendors to worry. Berenguel said Peripheral Land "aggressively priced" its 30-Mbyte drive to cost less than most of the currently available 20-Mbyte hard disks.

Removable storage

An odd combination of low and high capacity for a slightly larger price was introduced in the IBM world several years ago and has since found its way into the Macintosh. Called the Bernouilli Box, and originally developed by IOmega Corp. of Roy, Utah, this removable cartridge drive allows users to have unlimited storage on 10- or 20-Mbyte removable disks. This approach provides some of the advantages of a hard disk while keeping the price low and retaining the easy backup of floppy disks.

One disadvantage of this approach is that cartridges for the Bernouilli Box are expensive. Peripheral Land claims to have solved the problem with its new product, the Infinity Drive. The 10-Mbyte Infinity Drive cartridge is cheaper per megabyte than those for other removable cartridge drives, Berenguel said.

Of course, the 10-Mbyte-per-cartridge capacity does limit how this type of mass storage device can be used. Berenguel suggested that a good application for the Infinity Drive would be in a consultant's office.

> "We felt that 20 megabytes was insufficient for personal use. Of the 20-megabyte disks that we sell, the majority of the time [the users] come back for another drive."
>
> **LEO BERENGUEL,**
> president, Peripheral Land

He said the disks are large enough so a user could keep the applications and data for each client on a single cartridge, thus keeping the files more orderly than if they were clumped together on a higher-capacity, non-removable hard-disk drive.

While removable storage units will probably not replace fixed hard-disk drives, they do help users with more flexible and wide-ranging needs. In addition to IOmega and Peripheral Land, Bering Industries Inc. of Scotts Valley, Calif., Jasmine Technologies Inc. of San Francisco and SuperMac Technology of Mountain View, Calif., market removable cartridge drives.

The disappearing middle

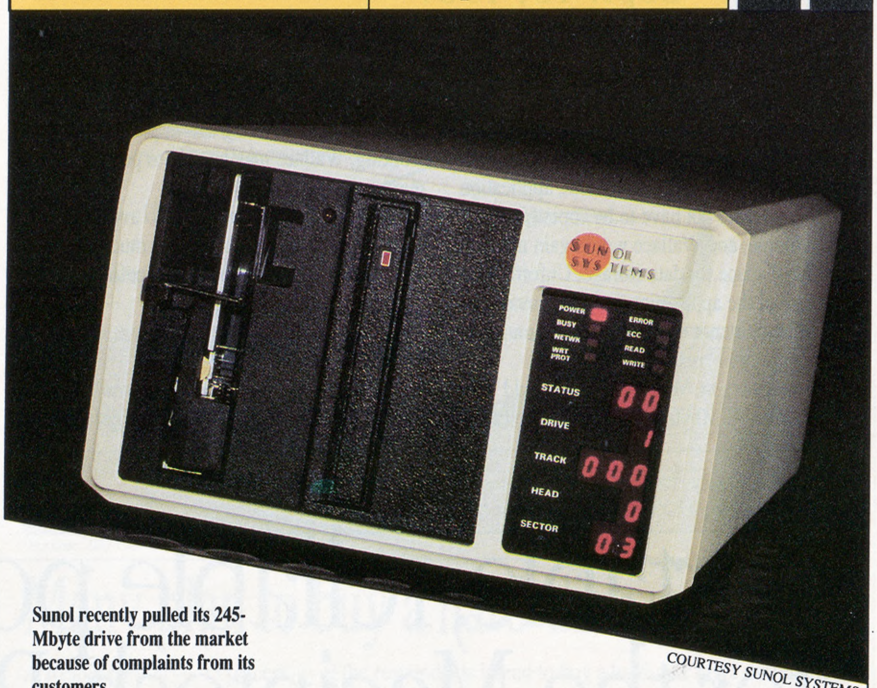
The addition of high-capacity drives and eroding prices for smaller drives has put a squeeze on those in the middle. Users faced with budget restrictions are likely to buy the cheaper, smaller disks. But those with larger demands are also less restricted by fiscal concerns. The $1,000 difference between an 80-Mbyte drive and a 200-Mbyte drive is less important to these users, Wurts said. They would rather spend the extra money and be assured that they will not run out of storage soon after the purchase of a drive.

Much of the mass storage requirement stems from the graphics capabilities for which the Macintosh is frequently put to use. Storing all of the information required for graphics programs and their documents consumes a considerable amount of storage space. For example, files created by an image digitizer can take up to 2 Mbytes or more of space on a drive. For graphics professionals with the need to store a number of these types of files, a minimum of 30 Mbytes is a necessity. In addition, the increased capabilities of the Macintosh II and the SE have made the room necessary for graphics data storage even more critical.

For example, the Macintosh is being examined as a possible CAD/CAM/CAE (computer-aided design, manufacturing and engineering) workstation by companies such as Lockheed and Hughes Aircraft, said Eric Herzog, director of sales and marketing for NuDATA.

Other applications are forcing users toward larger disks as well. Having found its way into an office as a desktop-publishing/graphics computer, the Macintosh is increasingly being used for other purposes, including databases.

Database programs and their data are notorious for hogging memory and storage space. Databases that also store graphic information can rapidly absorb tremendous amounts of storage space.



Sunol recently pulled its 245-Mbyte drive from the market because of complaints from its customers.

COURTESY SUNOL SYSTEMS

Finally, networks and special systems such as UNIX for the Macintosh require extremely large amounts of storage. A/UX, Apple's version of UNIX, for example, will require a minimum of 80 Mbytes when it ships later this year. On top of that, "you need to have some room for your storage of Macintosh files also," Berenguel said.

Other alternatives

However, not all users agree that the only solution for storage-hogging applications like networks is a larger hard disk.

Bruce Wallace is the executive director of Administrative Resources Association (ARA), in Columbus, Ind. And while Wallace's 70-Mbyte Sunol hard disk is filling up, he said there are ways to avoid having to buy a new, larger storage system.

ARA serves cities and towns trying to secure development funds through federal grant programs and has been a long-time Macintosh shop.

"We bought very early, before Apple was producing the AppleTalk connectors. At that time, 70 Mbytes was expensive," Wallace said.

The 70-Mbyte disk is linked to five Macintosh computers and two printers. ARA's professional staff uses the system to produce reports, contracts, loan agreements and bulletins for ARA's 12 client communities.

The disk itself is divided into 10 volumes, two volumes for each user.

The disk is beginning to fill up, Wallace said, but instead of buying a larger disk, he may "do some serious archiving" instead.

Wallace said by shortening the time files remain active on the disk and by frequent housecleaning, he may be able to preserve more space on the hard disk. Archived files

Continued on next page

New technique permits more storage

There are a number of ways to make a high-capacity hard disk. Of course, all of them carry a price tag.

Manufacturers and vendors are using different recording media, new recording techniques and improved control software that allow more bits of information to be packed on the hard disk.

A method that has attracted a lot of attention within the MS-DOS community and which is now becoming common among Macintosh disk vendors is called Run-Length Limited (RLL) technology. RLL is not hardware; it is software embedded into the circuitry of a disk unit's controller that governs the operation of the hard disk.

RLL can increase the density with which data is stored on a hard disk by up to 50 percent, while maintaining the rapid transfer rate among the hard disk, its controller and the computer itself.

RLL works by encoding the data going to or from a hard disk in a special way. Information is stored on magnetic media as a series of 1s and 0s. While in the computer itself, these two digits are represented by a voltage. The information is stored on a hard disk, however, not as voltages but as a magnetic polarity.

Envision the surface of a disk as being covered with tiny bar magnets. A magnet with its north pole facing one direction may represent the digit 1. If it is lying in the opposite direction, the information would be read as a 0. On a disk, these magnets are the size of small particles, and a change in direction is called a "flux reversal."

If information is recorded directly from the computer onto the disk without using special recording formats, each flux reversal can represent just a single digit. In fact, using a straightforward encoding scheme, it requires more flux reversals than the number of bits being stored because information about how to retrieve the data must be stored with the information itself.

However, by encoding the data in a special format, each flux reversal can be used to represent more than one bit of information. Both the reversal itself and its position within the data stream are used to determine the meaning of the data stored on the disk, so that it would require only six flux reversals to store 12 bits of data.

When information is retrieved from the disk, the controller performs the reverse process and decodes the information before sending it along to the Macintosh CPU.

Although all types of controllers encode the data to a certain extent, control circuitry using RLL technology makes this process highly efficient. And since it is based on software rather than hardware, it is cheaper for manufacturers to implement.

Problems with RLL

But Virginia Wurts of Sunol Systems of Pleasanton, Calif., warned that all RLL encoding techniques are not equal.

She said Sunol, which claims to have been the first to use RLL in its mass storage devices, had some difficulty in its early versions of the system. Bugs in the encoding programming can both slow the data storage and retrieval processes as well as cause data to be misread.

Wurts said Sunol has since worked the kinks out of its RLL system. But, she said, the many new vendors coming into the market with RLL technology may face the same problems Sunol had.

Eric Herzog, director of sales and marketing for NuDATA of Santa Clara, Calif., agreed that on some disks, RLL technology just doesn't seem to work well.

Herzog said NuDATA has experienced trouble on certain types of small-capacity disks, from 30 to 60 Mbytes. Using these disks with a standard controller and MFM (modified frequency modulation) encoding, the disks worked just fine, Herzog said.

But when the company tried to use the disks with an RLL controller, "we had drives failing all over the place, he said.

This is "not a problem in the high-capacity drives," Herzog said. He said the difficulties seemed to stem from the frequency of the electronic "noise" generated by smaller hard disks.

Because of this problem, NuDATA has stopped using RLL controllers despite the storage capacity gains they offer.

"We got burned," Herzog said, "so we are taking a siesta." — *By Avery Jenkins*

Continued from previous page

will be retained on floppy disks.

Wallace said another option is updating software to allow more efficient disk and file sharing. By permitting shared files, application programs would not have to be copied into each volume, and Wallace would gain much additional space for data storage. Unfortunately, many of the application programs available for the Mac are not truly multi-user, though most are at least "network-friendly."

As a last resort, Wallace said he could buy another 70-Mbyte disk and add it to the system. In this way, ARA does not lose its original hard-disk investment. But through more frequent archiving and improved networking, Wallace may be able to postpone that purchase.

Some purchasers are trying to avoid data storage restrictions by buying as much disk as they can right now — thereby hopefully ensuring a long-term investment.

Leading-edge technology woes

Disks in the 200-Mbyte range are available from several suppliers, and even larger disks can be found. But Sunol's Wurts warned that the large disks are at the leading edge of technology — and that can cause trouble for the consumer.

Reliability is more difficult to achieve with the high-capacity disk drives, Wurts said. In fact, Sunol recently pulled its 245-Mbyte drive from the market because of complaints from its customers.

"We fell on our faces a few times because we were pushing the technologies too hard," she said.

Wurts said Sunol hopes to have another version of the 245-Mbyte disk, made by a different supplier, back on the shelves later this fall.

Another company, MacProducts U.S.A. of Austin, Texas, also recently pulled its high-capacity drive off the market, according to John Kinnaird, who identifies himself as the company synthesist.

While MacProducts — a recent merger of two retail stores, a mail-order house and a hard-disk manufacturer formerly known as Rabbit Industries — used to sell a 235-Mbyte drive, the company is now "looking for another source for the disk drives," Kinnaird said.

Kinnaird said that MacProducts currently sells a 91-Mbyte drive and plans to release a 151-Mbyte disk this month.

> "We fell on our faces a few times because we were pushing the technologies too hard."
>
> **VIRGINIA WURTS,**
> sales manager, Sunol Systems Inc.

MacProducts, Sunol and other vendors are counting on the high-capacity drives to comprise an increasing share of their business.

Currently, the high-capacity hard disks provide only one-third of MacProduct business in this area. But by the end of the year, Kinnaird said, these disks will constitute 50 percent of the firm's hard-disk sales.

At least one company, NuDATA, is dedicated solely to the high end. NuDATA sells 580-Mbyte drives as well as the Giga Tower, a combined hard disk and Mac II workstation that can be expanded to 1.45 Gbytes, Herzog said.

Released earlier this summer, 10 of these products had been shipped by the third week of August, and Herzog said there are many promising leads for more sales.

Most of the interest, he said, is coming from high-tech manufacturers who are considering the Macintosh for networked engineering and graphics workstation applications.

What limits?

But some people think that enough is enough, and if users are looking for a Macintosh hard disk larger than 200 or 300 Mbytes, they are barking up the wrong technology tree.

While MacProducts is looking to its high-end disks as a future growth product, Kinnaird said he believes there is a practical limit to the necessary capacity of a hard disk.

"It will have to stop in the 200- to 300-Mbyte range," Kinnaird said.

At that point, he said, buyers should be looking at purchasing a minicomputer rather than just having additional storage onto the micro or its network.

And as ARA's Wallace has found, there are ways to work around limited data storage.

Just as Wallace is avoiding a larger disk because he wants to save money, Kinnaird said he believes "price will be the factor" limiting the size of hard disks.

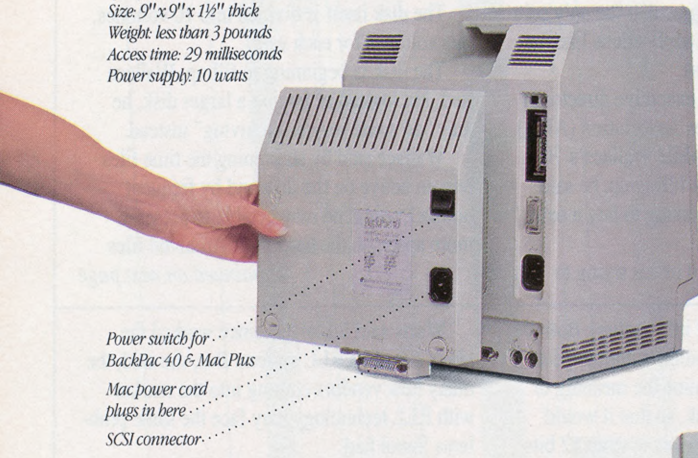
Beyond the 300-Mbyte range, "costs go up exponentially," Kinnaird said, "and what's the return?" ■

Portable, reliable power for the Macintosh Plus

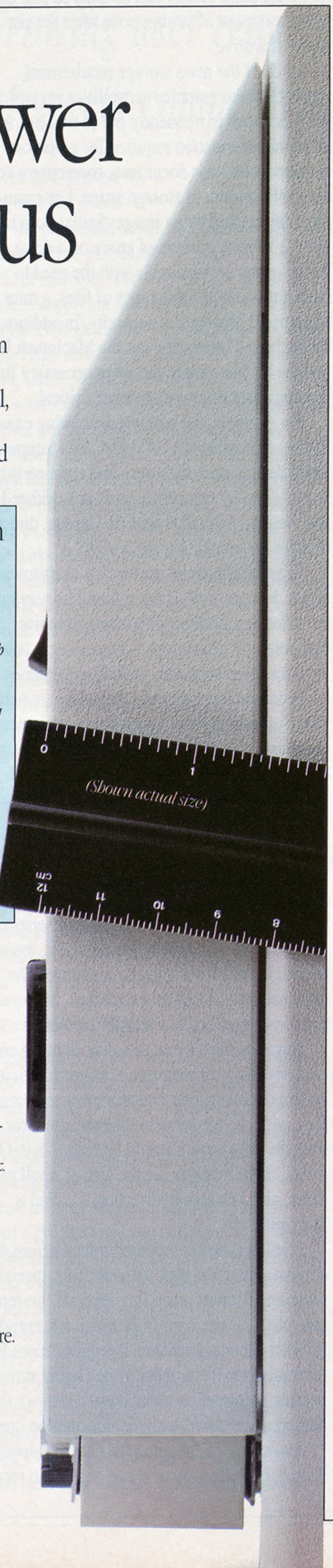
How small is the BackPac 40™? See for yourself…

For those of you who were unable to visit Jasmine at MacWorld Expo in Boston and exclaim "I didn't realize it was *so thin*!" we'd like to provide you with the opportunity to do so now. We worked hard at Jasmine to integrate proven technology into such an extraordinarily small, light and convenient package. As quiet in operation as the Macintosh Plus itself, BackPac 40 offers you the convenience and portability of an internal hard disk with the reliability and ease of installation of an external hard disk.

Specifications–
Size: 9" x 9" x 1½" thick
Weight: less than 3 pounds
Access time: 29 milliseconds
Power supply: 10 watts

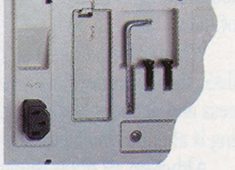

Power switch for BackPac 40 & Mac Plus
Mac power cord plugs in here
SCSI connector

Simple installation
1 *Remove Mac power cord.*
2 *Remove battery door and place in storage receptacle.*
3 *Remove 2 lower screws with tool provided. Place in storage receptacle.*
4 *Snap BackPac 40 and SCSI connector into place on Macintosh Plus.*
5 *Tighten BackPac 40 fasteners with coin.*
6 *Plug Mac power cord into BackPac 40.*
7 *Power up Mac and BackPac 40.*



BackPac 40 comes pre-formatted and works right out of the box.

It is very easy to install with no dangling cords or cables. Once installed, BackPac 40 can be left in place permanently or removed at any time. The combined Macintosh Plus and BackPac 40 slips into a standard Macintosh carrying case.


Everything in its place– Convenient storage has been provided on the inner panel for installation tool, two screws, and battery door from your Mac.

To Order Call (415) 621-4339
BackPac 40 – $1299 *($1339 Visa/MasterCard)*
PATENT PENDING
Our prices include 30 Day Trial/Money Back Guarantee, and Full One Year Warranty.
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BackPac Features:
- Silent, efficient: No fan required.
- Doesn't void Mac warranty.
- Daisy chain up to 6 SCSI devices.
- Back-up software plus 9 MB of free shareware & public domain software.

Jasmine Technologies, Inc.
555 De Haro Street, San Francisco, CA 94107

Every drive is shipped with a technical hotline number to answer any questions. BackPac 40 and Jasmine are trademarks of Jasmine Technologies, Inc. Product specifications and prices are subject to change. Prices do not include shipping, CA sales tax (6.5%) or special rush handling. Apple is a registered trademark of, and Macintosh Plus is a trademark licensed to Apple Computer, Inc.

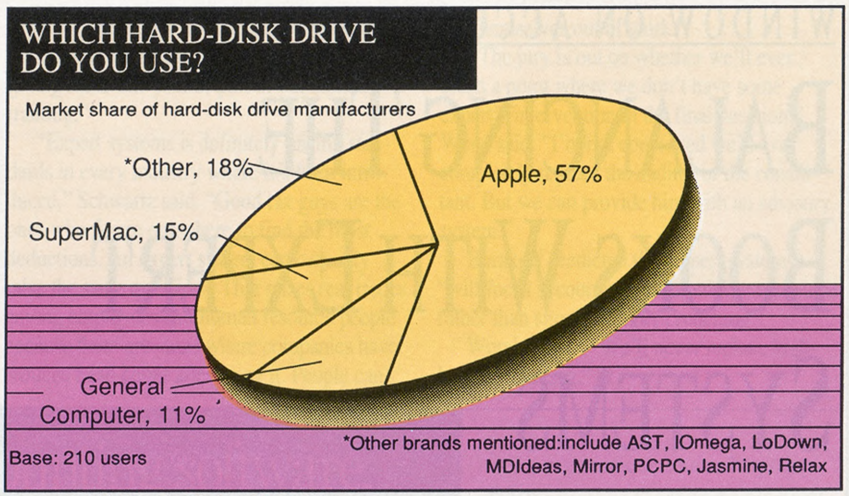
Focus: Mass storage

BY BILL LANGENES
Creative Strategies Research

Seven of every 10 MacWEEK readers use a Macintosh equipped with a hard-disk drive, according to a July survey of 301 subscribers. Another 28 percent do not have use of a hard-disk drive and 2 percent don't know if their system includes a hard-disk drive.

Among the 210 respondents who use hard disks, 57 percent use an Apple hard-disk drive, 15 percent use a SuperMac Technology drive, 11 percent use a General Computer drive and 18 percent use drives produced by other manufacturers. None of the other drives is used by more than 2 percent of the respondents with hard-disk drives.

These are the results of the MarketWEEK survey of MacWEEK readers working in sites with large numbers of Macintosh computers.

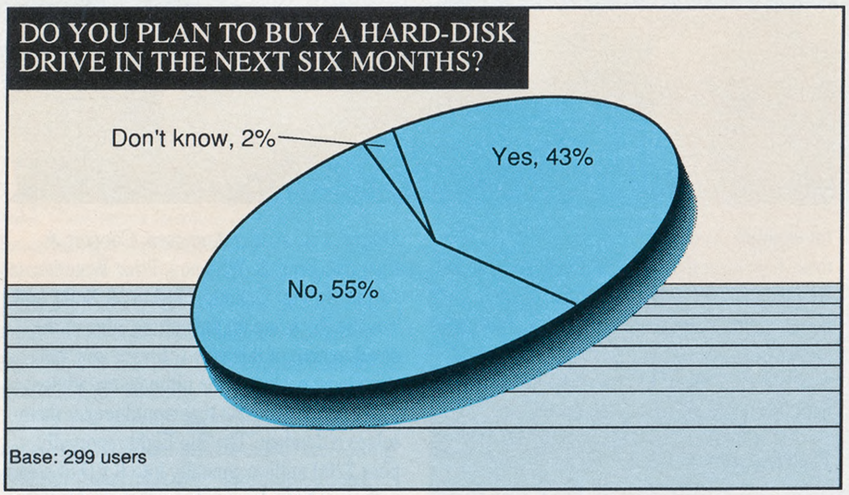

WHICH HARD-DISK DRIVE DO YOU USE?

Market share of hard-disk drive manufacturers

Base: 210 users

*Other brands mentioned:include AST, IOmega, LoDown, MDIdeas, Mirror, PCPC, Jasmine, Relax

Source: July 1987 Creative Strategies/MacWEEK


DO YOU PLAN TO BUY A HARD-DISK DRIVE IN THE NEXT SIX MONTHS?

Base: 299 users

Source: July 1987 Creative Strategies/MacWEEK

Many plan to buy a hard-disk drive

A sizable portion — 43 percent — of the respondents intend to buy a hard-disk drive during the next six months. Fifty-five percent said said they did not plan to buy a hard disk during the next six months and 2 percent were uncertain.

A significant portion of these prospective buyers already have a hard disk. Almost two-thirds of those intending to buy a hard disk currently use one. These users are probably planning to increase their machine's mass storage capacity either by upgrading to a larger disk drive or by adding a second drive for greater combined storage.

The remaining one-third of prospective buyers do not currently use a hard-disk drive. Among users without a hard-disk drive, 55 percent intend to buy one during the next six months.

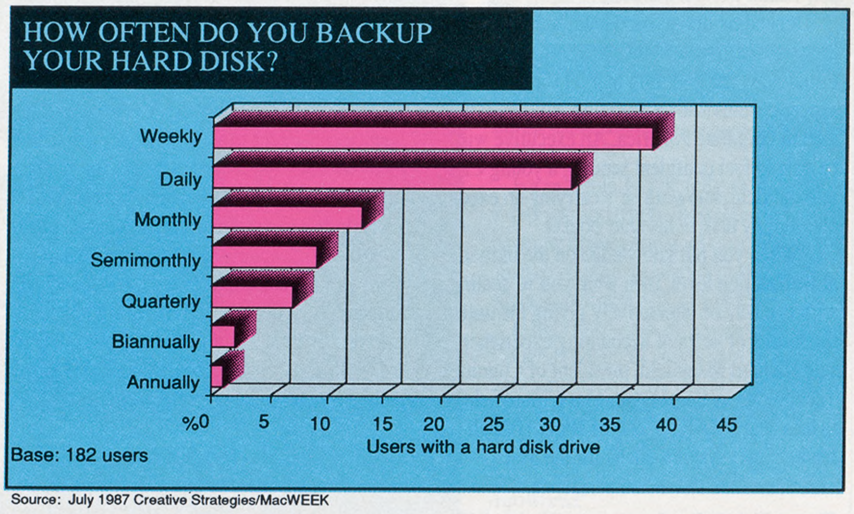
Most users planning to buy a hard disk work with less powerful Macs. Twenty-one percent of prospective buyers use Mac 512Ks, 71 percent use Mac Pluses and 8 percent use Mac SEs.

Most hard-disk users back up data

The great majority — 87 percent — of respondents using a hard disk take the precaution of backing up the data on their hard disk. Sixty-nine percent of respondents indicated they back up data daily or weekly, while a total of 82 percent of hard disk users back up their data at least monthly.

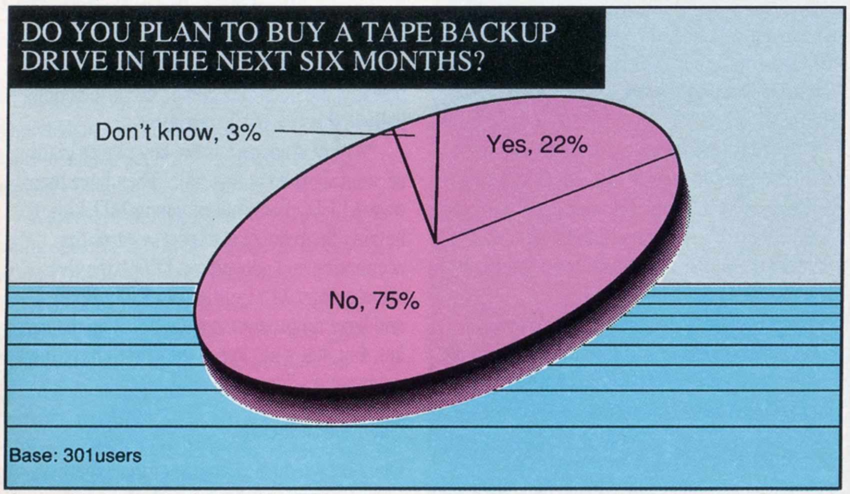
Only 12 percent of all hard-disk users surveyed use a tape backup system. The low number of tape units indicates the vast majority of hard disks are backed up on disks, using either a manual method or one of the available hard-disk backup utility programs.

Do hard-disk drive users with tape-backup units back up their data more frequently than those without? Yes, according to those surveyed. Whereas 69 percent of all hard-disk drive users back up their data at least weekly, 78 percent of the respondents with a tape backup unit do so at least weekly.


HOW OFTEN DO YOU BACKUP YOUR HARD DISK?

Base: 182 users

Source: July 1987 Creative Strategies/MacWEEK


DO YOU PLAN TO BUY A TAPE BACKUP DRIVE IN THE NEXT SIX MONTHS?

Base: 301users

Source: July 1987 Creative Strategies/MacWEEK

Tape mass storage use to increase

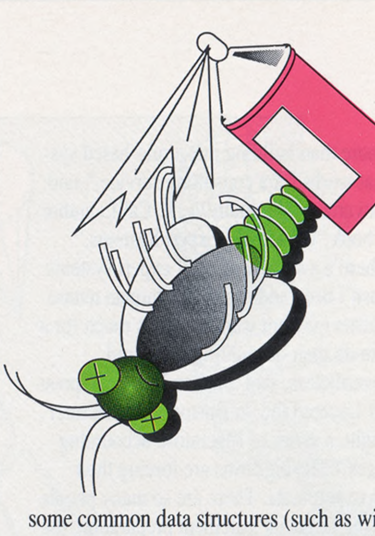
In the next six months 22 percent of respondents plan to buy a tape backup unit, 75 percent do not intend to do so and 3 percent are uncertain.

There is a correlation between respondents' buying plans for these two mass storage products, with 73 percent of those intending to buy a tape-backup system also intending to buy a hard-disk drive.

Where will these respondents make their purchases? Retailers are the heavy favorites among tape backup users — 66 percent — and hard-disk buyers — 52 percent. Buying directly from manufacturers is the first choice of 16 percent of all respondents. Main sources of other buyers include mail-order houses and wholesale distributors.

The MarketWEEK survey is conducted exclusively for MacWEEK by Creative Strategies Research, a high-technology research and consulting firm based in Santa Clara, Calif. For this survey, a random sample of U.S. corporate and other volume users were selected from the MacWEEK subscriber database and surveyed by telephone in July. A total of 308 respondents were reached; 301 agreed to take part in the survey.

Fumigating your code



TMON 2.8

ICOM Simulations Inc.
648 S. Wheeling Road
Wheeling, Ill. 60090
(312) 520-4440
$149.95
Strengths: Transparent and reliable operations; numerous windows and functions reveal most aspects of a program's operations; first-rate manual; independent of operating system; supports Desk Accessories and INITs.
Weaknesses: Interface is not fully Mac-like; does not support the 68020 instruction set.

The Debugger

Jasik Designs
343 Trenton Way
Menlo Park, Calif. 94025
(415) 322-1386
Mac Plus/SE version (runs with all 68020 accelerator boards) **$170** (including MacNosy);
Mac II (universal) version **$350** (including MacNosy II)
Strengths: Widest range of features; built-in access to source code; supports Mac II.
Weaknesses: Documentation is terse; doesn't support Desk Accessories and INITs.

BY JAN EUGENIDES
Special to MacWEEK

"Bugs come in many shapes, sizes, flavors, and species, but," as the manual for ICOM Simulations' TMON debugger puts it, "they're all ugly."

That's why a good debugger — a program that helps a software developer track down flaws in a program under construction or examine the internal operations of an unknown program — is an essential tool for every serious programmer.

Apple includes one debugger, called Macsbug, among the software it makes available to programmers. That program, adapted from software originally written at Motorola when the 68000 chip was created, is still widely used. But many developers have turned to more sophisticated debuggers provided by third parties. Introduced two and a half years ago, TMON from ICOM Simulations Inc. of Wheeling, Ill., was the first such program and rapidly became the favorite for many programmers. It is now out in an updated version with a much-improved manual. Now Jasik Designs of Menlo Park, Calif. — a company known previously for the MacNosy disassembler — has released a new program called, simply, The Debugger, which is available in two versions and with brand-new documentation.

Each debugger has strengths of its own. Jasik's Debugger has a much more familiar and convenient Macintosh interface; it provides more source-level information (using programmer Steve Jasik's original code); and in the new "universal" version, it provides support for the 68020 instruction set. On the other hand, its documentation, although improved, remains terse, and the range of choices the program offers may be overwhelming to some novices. For its part, TMON boasts an excellent manual and straightforward, transparent and reliable operations, as well as a number of features The Debugger lacks.

Making a choice between The Debugger and TMON is not easy. In fact, it's not necessary — programmers will want to have both of these invaluable tools available.

TMON

TMON stands for The Monitor. Whereas Apple's Macsbug uses a standard command-line interface (no mouse commands at all), TMON offers many more functions and an interface that makes good use of the mouse. (It's not a standard Macintosh interface, however, because the program works independently of the Macintosh operating system.)

TMON is definitely a multiwindow program: You can have as many as 19 open at one time. It provides nine different types of windows — Dump, Assembly, Registers, Breakpoints, User, Heap, File, Number and Options — that allow a programmer to monitor various aspects of a program as it executes. You also can display duplicates of some types of windows; for example, you can have several Dump or Assembly windows on screen simultaneously. If you have a large display (such as on a Mac II), TMON can make use of the entire height of the screen, but its windows cannot be resized or moved horizontally.

A Dump window displays the contents of a range of memory in both hexadecimal and ASCII. An Assembly window displays a disassembly of a range of memory along with other useful information, such as label names of called routines and the offsets into the current routine. The current release of TMON, Version 2.8, does not support the 68020 instruction set; it will run, however, on a Mac II or other 68020 machine. The Registers window displays the contents of all the 68000 registers. The Breakpoints window shows the addresses at which you have set breakpoints; when the program under examination reaches such a point, TMON is automatically invoked.

Some of the most powerful of TMON's capabilities are in the User window. It is configurable and displays a number of functions, depending on which you've specified. The 27 functions supplied with the program are divided into three groups: memory, trap and control functions. You can intercept trap calls; scramble the heap to reveal memory management problems; perform checksums on trap ranges; search, move, compare and fill memory; examine the stack or do a "stack crawl" based on any register; print any window or range of memory; and more.

There also is a function called "discipline" that checks the parameters of calls to the Macintosh ROM for validity and invokes TMON if any are questionable — an option that is especially useful for novice programmers. With complete source code for the standard user functions included on the disk, they can be customized by advanced developers.

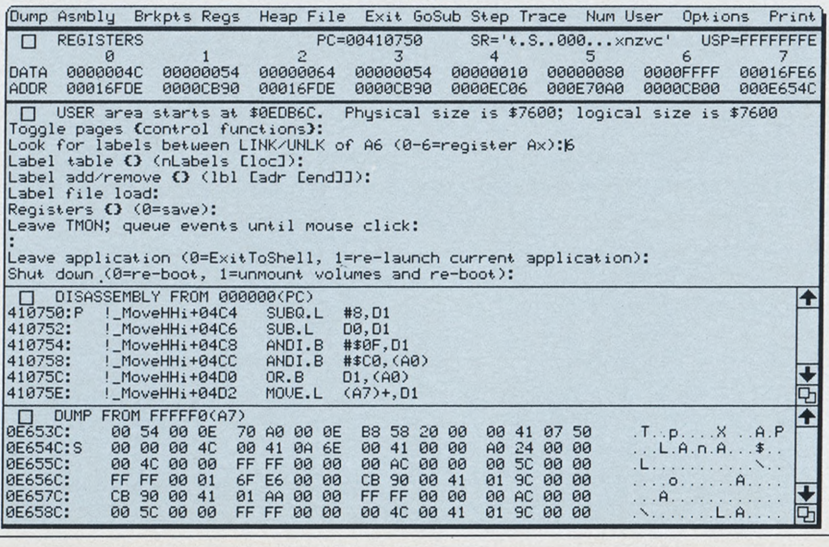
The Heap window displays the contents of either the application heap or system heap portions of the Macintosh memory, showing the addresses of various objects on the heap along with status information. A File window gives the reference numbers of any open files. The Number window allows you to convert numbers from hex to decimal or vice versa and to evaluate addresses and other expressions. Finally, the Options window allows you to turn on or off some of the label functions.

ICOM includes an INIT file called Startup TMON. When placed in your System folder, it automatically loads TMON when you boot your machine. Operation of TMON is straightforward: Load it into memory, then run the program you want to examine.

You may then enter TMON by pressing the interrupt switch on your Macintosh, by setting breakpoints or by instructing TMON to take over when a certain trap is called or a particular memory location changes value. For the Mac II or SE, ICOM Simulations provides another convenient INIT that allows you to invoke the debugger from the keyboard simply by pressing the Option key and the Power On button. The program takes over automatically if a system error occurs.

Once TMON is active, you can display parts of memory with Dump windows, disassemble any part of your program with Assembly windows, step through the program one instruction at a time, display the values of some common data structures (such as window records and text-edit records), examine the stack, trace the flow of the program to see what routines were called before the current one, save a list of the trap calls made by your program as it runs and much more.

You need at least a reading knowledge of assembly language to use a debugger like TMON, shown below.



```
Dump Asmbly  Brkpts Regs  Heap File  Exit GoSub Step Trace  Num User  Options  Print
☐ REGISTERS                  PC=00410750     SR='t.S..000...xnzvc'   USP=FFFFFFFE
          0         1         2         3         4         5         6         7
DATA  0000004C  00000054  00000064  00000054  00000010  00000080  0000FFFF  00016FE6
ADDR  00016FDE  0000CB90  00016FDE  0000CB90  0000EC06  000E70A0  0000CB00  000E654C
☐ USER area starts at $0EDB6C.  Physical size is $7600; logical size is $7600
Toggle pages {control functions}:
Look for labels between LINK/UNLK of A6 (0-6=register Ax):6
Label table {} (nLabels [loc]):
Label add/remove {} (lbl [adr [end]]):
Label file load:
Registers {} (0=save):
Leave TMON; queue events until mouse click:
:
Leave application (0=ExitToShell, 1=re-launch current application):
Shut down (0=re-boot, 1=unmount volumes and re-boot):
☐ DISASSEMBLY FROM 000000(PC)
410750:P  !_MoveHHi+04C4   SUBQ.L  #8,D1
410752:   !_MoveHHi+04C6   SUB.L   D0,D1
410754:   !_MoveHHi+04C8   ANDI.B  #$0F,D1
410758:   !_MoveHHi+04CC   ANDI.B  #$C0,(A0)
41075C:   !_MoveHHi+04D0   OR.B    D1,(A0)
41075E:   !_MoveHHi+04D2   MOVE.L  (A7)+,D1
☐ DUMP FROM FFFFF0(A7)
0E653C:    00 54 00 0E  70 A0 00 0E  B8 58 20 00  00 41 07 50   .T..p....X ..A.P
0E654C:S   00 00 00 4C  00 41 0A 6E  00 41 00 00  A0 24 00 00   ...L.A.n.A...$..
0E655C:    00 4C 00 00  FF FF 00 00  00 AC 00 00  00 5C 00 00   .L...........\..
0E656C:    FF FF 00 01  6F E6 00 00  CB 90 00 41  01 9C 00 00   ....o......A....
0E657C:    CB 90 00 41  01 AA 00 00  FF FF 00 00  00 AC 00 00   ...A............
0E658C:    00 5C 00 00  FF FF 00 00  00 4C 00 41  01 9C 00 00   .\........L.A...
```

TMON is essential if you plan to write any INITs because it can be loaded into memory at startup — The Debugger can't. It also can debug Desk Accessories, which at the moment The Debugger cannot handle.

TMON comes with an excellent user's guide and technical reference manual. The well-written documentation is aimed at the programmer who is new to the Macintosh — although not new to programming — and includes a fair amount of background information intended to orient the reader. The technical reference manual goes into great detail about the inner workings of each feature of TMON and gives many short samples and illustrations. There's a fairly good index and a nice quick-reference section, as well as a handy pocket guide to the 68000 chip's instruction set.

The Debugger

The Debugger also is a multiwindow program. It offers many more types of windows than TMON and can make full use of large displays. On the Macintosh II, it can be configured to use multiple screens so that you can run your program on one screen and the Debugger on another. It adheres more rigorously to the Macintosh interface than does TMON, and in general The Debugger gives you more source-level information, like global variables and procedure names.

It also includes a number of convenient features that TMON lacks. For example, you can click on any item, such as an address or label name in the Assembly window, and The Debugger displays its structure and values, including field names and types. TMON can display only a few selected data structures, but The Debugger can handle almost all the ones in "Inside Macintosh," and you can teach it about structures particular to your program.

The Debugger includes a Registers window that goes one step farther than TMON's window by displaying not only the contents of the registers but also the value of the address pointed to by address registers and the value of the data registers in ASCII. The program also provides a separate window that displays the contents of the floating-point registers if a 68881 math coprocessor chip is installed.

The Stack window displays the various procedure addresses on the stack along with the name of the procedure and the address of the stack frame. Clicking on the address and pressing Command-D brings up a display of the procedure itself.

The Assembly window displays the 68000/68020 code. In "animated trace mode" The Debugger also leaves a record of the executed instructions and their operand values in the same window and/or in a separate window for later reference. For each trap call, the parameters for the call are displayed in Pascal format, just as they appear in "Inside Macintosh."

Like TMON, The Debugger can perform trap intercepts, but the traps are divided into related groups, called suites, that can be acted upon together. You may elect to break into The Debugger on combinations of entry to or exit from a specific trap, on user calls or on all calls to a trap. The Trap Call window displays the trap in its Pascal format and shows the values of each parameter being passed. You can step through a program either manually or automatically — you specify the rate — and The Debugger will display the values being passed to each trap as it is called, along with the results of each instruction.

The Heap window, similar to TMON's, displays the contents of the application or system heaps, but it recognizes a few more objects.

The Debugger is especially flexible with regard to breakpoints. It allows you to set as many as you like, limited only by memory; you can even set breakpoints in code segments that are not currently in memory. You can establish conditional breakpoints so that The Debugger will take over only when specified conditions are met. By attaching a set of statements to the conditional breakpoint, you can, for instance, have the program print out the values of particular expressions at the moment it is invoked.

One of the more powerful functions in The Debugger is what Jasik calls the "watchpoint" facility, which allows the programmer to monitor a selected area of memory that is being "clobbered," or inadvertently changed, by the program being tested. There is only minimal slowdown in the execution of the program.

From The Debugger's File menu you can open text files displaying, for example, your source code. This capability — lacking in TMON — means that you can see your source side by side with the generated object code, and with standard text-editing commands, you can make immediate changes to the code. While most of The Debugger's functions are in the Menus and hence readily accessible, there also is an on-line help facility to assist the user.

It should be mentioned that The Debugger is still under construction. Some problems remain and it occasionally goes haywire, but we have found it to be pretty solid under most circumstances. Jasik, the programmer, is available on CompuServe and Delphi to answer questions. The Debugger includes free membership on Delphi, where you may visit the Nosy Support group to discuss things with other users, ask questions and download the latest versions of The Debugger and MacNosy.

Using The Debugger is different from using TMON. The Debugger consumes a lot of memory — 400 Kbytes plus — and it requires at least 1 Mbyte of RAM to run, and 2 Mbytes is better. To use it, first run The Debugger and then launch the program to be examined from within The Debugger. The Debugger remains in control, and you can bring its power to bear upon the problem at hand.

The Debugger comes with MacNosy (a powerful disassembler/decompiler) and the two can work together. The Debugger is unparalleled for examining code for which you do not have the source (such as the Macintosh ROMs). It comes near to being a source-level debugger and yet retains the microscope-like features of an assembly-level debugger.

The Debugger can read the symbol tables directly from LightspeedC projects so that you can launch a project from within The Debugger and all the procedure names and global variable names appear in The Debugger's display. It also can handle .MAP files such as those produced by the Macintosh Programmer's Workshop, as well as standard Macsbug symbols. You can even feed it a list of label names as a text file. Or as a last resort, you can create a .snt file with MacNosy, and The Debugger will use those labels.

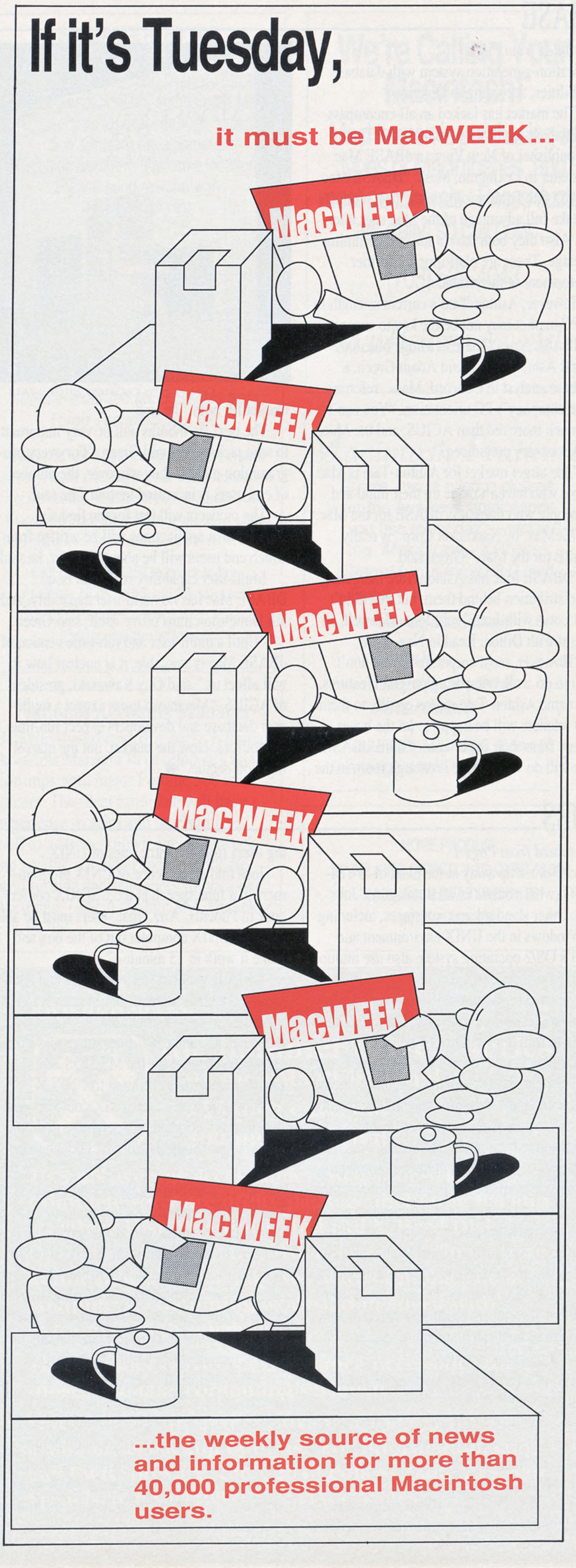
The Debugger's documentation is considerably less polished than TMON's and assumes that you are already knowledgeable on the Macintosh. Although there are some choice suggestions from Jasik (a.k.a. The Head Nose) about the art of debugging and a short discussion of The Debugger's design goals, for the most part, the manual sticks to the technical details of The Debugger and doesn't attempt much handholding. If you are already engaged in professional Mac programming, you won't have much trouble, and you'll be very pleased with the power and flexibility The Debugger offers you. If you're a beginner, however, you may feel overwhelmed.

Which is better?

There is no doubt that The Debugger is the more powerful of the two. It delivers much more information and has many more features. Because it depends on the Mac operating system, however, it is somewhat more vulnerable to certain types of bugs in the program it's watching. The price is higher, especially for the Mac II version, but you do get two programs — MacNosy and The Debugger. The price for the "universal" version also includes the cost of future updates to the programs.

TMON includes some features that The Debugger lacks, such as trap discipline — this is scheduled for a future version of The Debugger — and heap scramble. It is less obtrusive than The Debugger and small enough to always keep in memory. It does not depend on the Mac's operating system and so is less susceptible to "OS-killing" bugs in the program under inspection. The documentation is more suitable for the beginning Mac programmer, but as with The Debugger, you still need at least a good "read-only" knowledge of assembly language to get much out of the program.

Our personal preference is to have both tools available. We use TMON as a general-use debugger. Just set it and forget it; if something goes wrong, it's always available. The Debugger is our "big gun" — it's absolutely indispensable for tracking down obscure bugs and anomalies in the ROM or system software. ■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DBASE

Continued from Page 1

application-generation system with database capabilities, according to Dobyns.

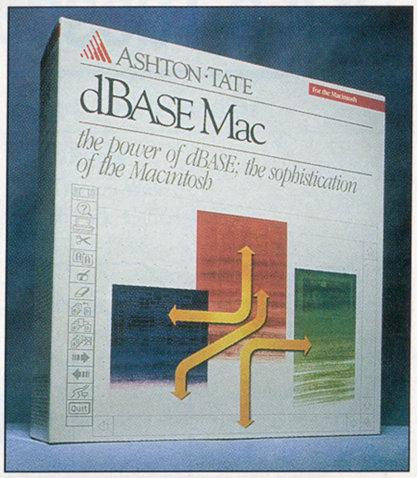
"The market has lacked an all-encompassing database application," said Keith Thompson, publisher of New View, a dBASE Mac newsletter in Lexington, Mass. "DBASE Mac and 4-D (4th Dimension) are the first products that take full advantage of the Mac user interface. Also they both have a full programming language. These are platforms for further development of the products."

However, Ashton-Tate's current strength in the PC market may not be the key to success for dBASE Mac. "There is a huge blue haze around Ashton-Tate," said Adam Green, a database analyst in Concord, Mass., referring to the company's PC orientation. "You can't get much more red than ACIUS, and the Mac market is very prejudiced."

"The target market for Ashton-Tate is Mac people who haven't made up their mind and PC people who think it is dBASE for the Mac. But McMax, by Nantucket Corp., is really dBASE for the Mac," Green said.

"DBASE Mac has Ashton-Tate marketing and distribution behind them, but that didn't help Lotus with Jazz," said John Maxwell, an analyst with Dillon, Read in New York.

"However, most corporate buyers don't want to do work comparing program features. The name Ashton-Tate means quality to them. And retailers will be happy to let the buyer choose from their experience. I think dBASE Mac will do well. There is enough room in the market for both," he said.



COURTESY ASHTON-TATE

The next six months will be very important to who picks what, said Green. "For every programming pioneer they win over, the number of end users is increased tenfold," he said.

The pioneers will test for the first six months, then applications will be written from which end users will be able to benefit, he said.

Multi-user capability is also an issue. DBASE Mac has no multi-user capability, and 4th Dimension must prove itself, said Green.

"Until a multi-user and run-time version of dBASE Mac is available, it is unclear how it will affect us," said Guy Kawasaki, president of ACIUS. "Macintosh users expect a multi-user database and developers expect run-time capabilities. Now the market, not the marketing, will decide." ■

JOBS

Continued from Page 1

QuickDraw chip away at the ideal of WYSIWYG (what you see is what you get)," Jobs said. Other standard user interfaces, including X-Windows in the UNIX environment and IBM's OS/2 operating system also use multiple imaging models, he said.

"The next generation of computers needs a [standard] imaging model, and I think we're going to find it's PostScript," he said.

Display PostScript is a complete implementation of the page-description language, including outline fonts, arbitrary line widths, rotation and color. It includes performance enhancements and extensions for the screen, Jobs said.

Display PostScript will not be proprietary, but will be available for licensing from Adobe. The two companies expect it to become a standard for UNIX-based computers.

If so, it could attract considerable interest from software developers who have previously shunned UNIX. With the Display PostScript standard, developers could be assured that their programs would run on many machines without writing special drivers.

"It's absolutely important to make clear what application drivers are being used by NeXT," said Robert Herwick, a Hambrecht & Quist analyst. "NeXT is obviously trying to lay out an environment that is appealing to developers because it's easy to support."

True WYSIWYG graphic displays also would further Jobs' long-time cause of insulating users from the intricacies of UNIX.

Jobs told an audience of UNIX programmers in a June speech at the USENIX conference in Phoenix, Ariz., that "users must be able to take a UNIX computer out of the box and make it work in 15 minutes."

UNIX is widely used in colleges and technical-work environments, but has never found mainstream support until now. With hardware independence and ease of use, many developers who now write for the MS-DOS and Mac environments might be lured to UNIX.

Jobs said he believes UNIX could become the standard workstation operating system of the '90s. PostScript is "robust" enough to last 20 years.

Apple is developing its version of a UNIX-based system, called A/UX. It is expected to be available early next year. However, A/UX is unlikely to employ the open-architecture Display PostScript. Instead, A/UX provides users with access to QuickDraw, according to beta testers. This would allow developers to use the System Toolbox to provide Mac-like functionality for applications written under A/UX.

Jobs' enthusiastic support of PostScript was countered by a fellow panelist at the Seybold session, Charles Ying, a co-founder of ATEX Inc. of Bedford, Mass. "If you look at the PostScript language, it is terrible," Ying said.

Regarding NeXT's computer, Jobs said only that "it's not behind schedule. We'll ship it when it's ready." ■

INTERLEAF

Continued from Page 1

traditional technical market.

"Although the biggest market segment for our software is technical documentation, our market is much larger than that," said David Boucher, president of Interleaf. "GTE, our single biggest customer, has used our TPS for designing display ads. We are also targeting investment bankers."

Some observers are not convinced that Interleaf can crack the mainstream desktop-publishing market. "We expect that [Interleaf] Publisher will be more successful in the sophisticated technical documentation market," said Rick Young, acting director of the electronic-publishing group at Dataquest, a San Jose, Calif., market research firm.

The new Mac II software may confuse new corporate publishers shopping for a technical documentation system.

"We did nothing to contradict the Mac operating system," Boucher said. "We included support for a single-button mouse, double clicking, close-window square, scroll bars and Desk Accessories," he said.

Interleaf Publisher, written to run on the Mac II under the Macintosh operating system, requires 5 Mbytes of RAM and a 40-Mbyte hard disk and does not support color. TPS files created on a Sun workstation can be transferred to a Mac II over AppleTalk and Ethernet because the file formats of each version are compatible.

Interleaf Publisher for the Mac II provides most of the same features as the TPS software for Sun, DEC and Apollo computers, but not all.

For example, Interleaf Publisher does not support the ViewStation capability that was added to TPS in March. ViewStation allows users to send composed pages to authors and editors via electronic mail or a network.

"This is a serious limitation because the Mac is a networked machine. The Interleaf software for the Mac functions like a dedicated composition system," said Young.

Interleaf Publisher allows the user to import MacWrite, Microsoft Word and ASCII text files, as well as images created in MacDraw and MacPaint.

"Interleaf should have developed at least three modules of the software for the Mac II, such as a writer's workbench for text processing, a graphics module for technical drawing and a full-featured composition module for composers," Young said.

Unlike most publishing programs for the Macintosh, Interleaf Publisher outputs only to PostScript laser printers and to typesetters. ■

APPLE

Continued from Page 1

what IBM can offer its customers. Analysts say the Interleaf Publisher software package that drives expensive engineering workstations for writing thick technical manuals likely will put Apple within reach of lucrative U.S. government contracts. It's the most powerful program ever packaged for a personal computer, according to David Boucher, president of Interleaf Inc. of Cambridge, Mass.

"Apple's role is to bring together a number of third-party products and market them as solutions," Sculley said. Sculley predicted the 3-year-old desktop-publishing market will expand another 65 percent next year.

And nothing fuels a trend better than falling prices. Interleaf, an Apple value-added reseller, will bundle the Mac II, Interleaf Publisher and the LaserWriter Plus for $16,500. Boucher said the Mac package equals the performance and functionality of Sun Microsystems' $30,000 package. The product is scheduled to ship in November.

"If Interleaf is successful, this opens up a whole new market for Apple workstations," said software analyst Brian Mutert of Robertson, Colman & Stephens in San Francisco.

"The old wall between engineering workstations and personal computers has crumbled," Boucher said. "You can't efficiently do long documents with traditional page-layout systems."

The target customer for Interleaf Publisher is undefined in terms of market potential, Mutert said. Boucher said Interleaf's present installed base is 4,500 units, and he said Apple will likely match that in one year.

Not surprisingly, Sculley said Apple isn't abandoning its support of the low-end software that captured the desktop-publishing market.

In fact, Sculley also announced the formation of the Apple Training Alliance, a new support program to train people to use desktop-publishing software. Apple has sanctioned four companies to begin teaching Mac users integrated or individual applications in October.

The four companies are: Businessland Inc. of San Jose, Calif.; the Institute for Advanced Technology, a division of Control Data Corp. in Minneapolis; Micro Mentor of Cambridge, Mass.; and the Forhan and Wakefield Group of Westport, Conn.

The initial application selections include Aldus PageMaker 2.0; Microsoft Word 3.01 and PowerPoint 1.0; Silicon Beach Software's SuperPaint 1.0; and Adobe Illustrator 1.1.

Sculley outlined Apple's intention to overtake IBM in the desktop-presentation market. "There's no evidence of MS-DOS machines being used effectively in desktop presentations," he said.

Jeff Raikes, Microsoft's director of applications marketing, who shared the stage with Sculley, said, "Mac provides a superior foundation for desktop presentations." Microsoft Corp. of Redmond, Wash., used the forum to say it had spent $14 million to acquire Forethought Inc. of Sunnyvale, Calif., which developed PowerPoint.

Sculley also endorsed Cricket Presents…, which provides Mac users with the ability to create high-quality color presentations that can be reproduced on a wide variety of output devices. Cricket Presents… by Cricket Software of Malvern, Pa., is scheduled to be released Oct. 31 for $495. ■

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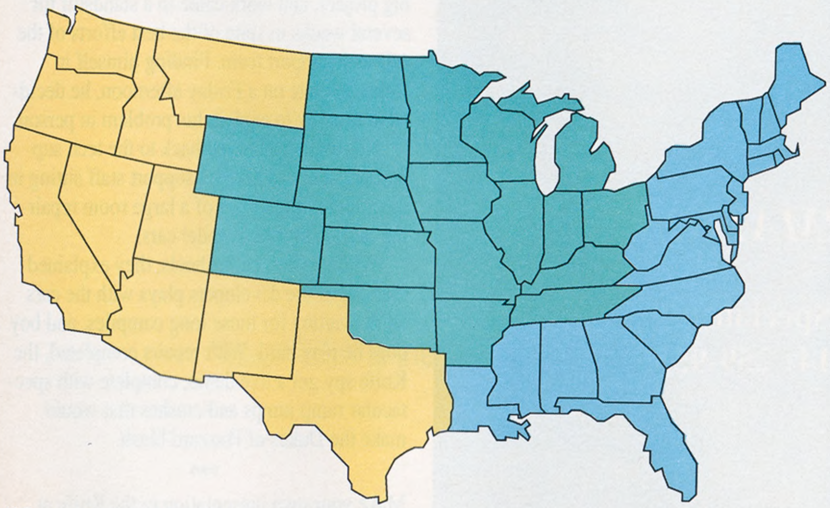

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MAC THE KNIFE

Scenes from Seybold: Considering that PowerPoint appears to be outclassed by the new Cricket Presents..., Microsoft representative Jeff Raikes put up a good front in pitching the product at the Apple press conference. But did anyone other than the Knife notice that the slides Raikes used in his presentation were not produced with PowerPoint?

Steve Jobs was typically feisty. "I took time out from writing my book to come out today," he told the crowded opening session, a slap at old antagonist John Sculley. Later, in response to a reporter's question, he denied any literary ambitions, claiming he finds it "more interesting to shape the future than relive the past."

For the first time in memory, Jobs failed to charge that anyone or anything was "brain damaged" — but just barely. Noting that markets have boomed in desktop publishing, desktop presentations, desktop communications and desktop engineering, he wondered if desktop brain surgery might be next. If so, there could yet be hope for DDL and X-Windows.

The last word on presentations, from MacroMind's Marc Canter, who is now positioning his VideoWorks II animation software for the presentation market: "There's only one thing guaranteed when the lights go down in a conference room — someone will go to sleep."

Stretched to the limits

The definition of system software gets more elastic every few weeks. Today's news is that yet another Apple program, MacTerminal, has been elevated to system software status. Apple will continue MacTerminal development and may even be working on a "killer term program" for release next year.

MultiFinder is due out this week, even as these electrons are being etched on the screen, but one Knife confidante believes Apple may miss the intro date. The problem is bugs, and lots of them. So if MultiFinder is available as you read this, proceed with caution.

A fully equipped Mac II workstation (2 to 4 Mbytes of RAM, a 40- to 80-Mbyte hard disk, color monitor, A/UX, rainbow logo) will run about $10K at your friendly full-list retail outlet, but only $5K if you've paid your university registration fees. Those guys at NeXT, Sun, Apollo and DEC must like each other a lot, since they keep trying to play together in the same ballpark.

Blyth's public stock offering is no secret to anyone, but if you look at the prospectus, there's a surprise. General Computer has some savvy big cheeses who were clever enough to buy in early and acquire about a quarter of Blyth.

Stupid word tricks: More than one Microsoft customer got quite a surprise when they booted up their shiny new Word 3.01 upgrade disk. What's this? BASIC Toolbox? You guessed it, they got the BASIC Compiler instead of the new Word. Just a case of mislabeled disks, and a quick call to Microsoft's non-800 number support line was all it took to rectify the situation. Now, what do you do with an errant BASIC?

ROM wasn't built in a day

You're probably not the only one tired of reading about the seemingly never-ending saga of bugs in the early run of 128-Kbyte ROMs, but more and more interesting work-arounds keep popping up. This week's solution is the most ingenious yet, and it usually works unless you have a slew of machines that need the fix. First, find a friendly authorized Apple dealer. Have him call you the first time someone's Mac is in for a new motherboard. Then have him swap your otherwise healthy ROMs for the ones on the defective motherboard. Chances are good that you'll get the "engineering-enhanced" set. While this technique isn't strictly kosher ...

For the little kid in all of us: An old Omnis hand told this story of his first experience with 4th Dimension. He got stuck in the middle of a big project, and work came to a standstill for several weeks in spite of the best efforts of the 4-D tech support team. Finding himself in Cupertino late on a Friday afternoon, he decided to drop by to explain his problem in person.

He calmly sauntered back to the tech support area only to find the support staff sitting in the middle of the floor of a large room repairing radio-controlled model cars.

While he cooled his heels, they explained that one of the developers plays with the cars while waiting for those long compiles, and boy does he play hard. With repairs completed, the Knife spy got a live demo, complete with spectacular ramp jumps and crashes that would make the Dukes of Hazzard blush.

***

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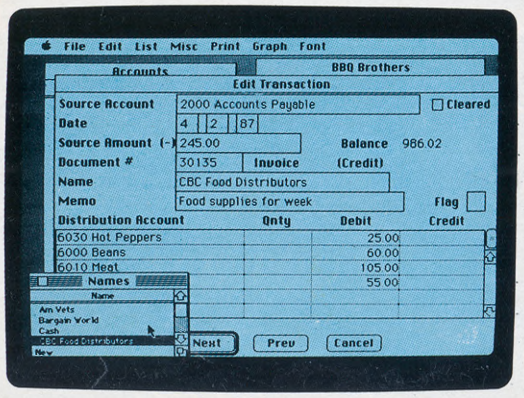

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